

The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

No. 2184.—VOL. XLVII.

LONDON, SATURDAY, JUNE 30. 1877.

WITH SUPPLEMENT. PRICE SIXPENCE. PER ANNUM, BY POST, £1 4s.

MR. JAMES H. CROFTS, STOCK AND SHARE BROKER,
AND MINING SHARE DEALER,
No. 1, FINCH LANE, CORNHILL, LONDON, E.C.
ESTABLISHED 1842.

Business transacted in all descriptions of MINING Stocks and Shares (British and Foreign), Consols, Bonds (Foreign and Colonial), Railways, Miscellaneous, Insurance, Assurance, Telegraph, Shipping, Canal, Gas, Water, and Dock Shares.

Business negotiated in Stocks and Shares not having a general market value.

Business in COLLIERY and IRON Shares, and in the principal WAGON and MANUFACTURING COMPANIES of the NORTH of ENGLAND and SCOTLAND.

Business in all the principal COTTON SPINNING Shares.

Mr. J. H. CROFTS, having now established CORRESPONDING AGENCIES in all the CHIEF TOWNS of the United Kingdom, is prepared to deal in the various LOCAL Stocks and Shares at close market prices.

ACCOUNTS FOR THE FORTNIGHTLY SETTLEMENT.

A Daily Price List, issued at 5 P.M., giving latest Quotations up to close of Market—4.30 P.M. Also, on the 1st of every month a List of all Securities currently dealt in upon the Mining and Stock Exchanges, with latest prices, current dividends, rate of interest yielded at market price, &c.

MINES INSPECTED.

BANKERS: CITY BANK, LONDON; SOUTH CORNWALL BANK, ST. AUUSTELL.

SPECIAL DEALINGS in the following, or part:—

15 Asheton, 25s.	50 Exchequer, 8s. 6d.	40 North Laxey, 21s.
10 Aberdunant, 13s. 3d.	5 East Van, 45s.	20 Pateley Bridge, £2 13
25 Bamfylde, 15s.	20 Eberhardt, £7 2s. 6d.	50 Pestana, 4s.
30 Cathedral, 15s.	25 Flagstaff, £2 11s. 3d.	50 Parys Mount, 11s. 6d.
25 Chapel House, £23 1/2	50 Glenroy, 22s.	50 Penstruthal, 6s. 6d.
2 Clementina (off. wd.)	10 Great Laxey, £21.	25 Pennerley, 5s.
35 Chontales, 8s. 6d.	30 Glyn, 12s. 6d.	10 Roman Gravel, £10 1/2
15 Cakemore, £23 1/2	20 Holmbush, £1 12s.	50 Rookhope, 21s.
20 Combmartin, 7s. 6d.	50 Javali, 8s.	10 Richmond, £4 1/2
20 Condes of Chilli, £23 1/2	20 Llanrwst, £3.	10 St. Harmon, £2 1/2
20 Darrell & Swansco, 35s.	10 Leadhills, 12s.	10 Tankerville, £7 1/2
5 D'Esby, 15s.	20 Marke Valley, 22s. 6d.	20 Van Consols, 15s.
	20 Monydd Gorddu, 10s.	20 W. Tankerville, 20s. 6d.
	25 New Quebrada, £2 1/2	10 W. Wye Valley, 43s.

BUSINESS also on hand in—Bodidris, R. Stone, Cesena Sulphur, Cedar Creek, Cargill, Denbighshire, East Craven Moor, Gorseid and Merilyn, Grosvinon, Lisburne, East Chamer, Llangan, Minera, Medlyn Moor, New Zealand Kapanga, Oakham Collieries, Pennant, Pandora, Port Phillip, Plymington, Santa Barbara, South Aurora, St. Harmon, Teocoma, Whal Newton, Wye Valley, West Wye Valley.

* SHARES SOLD FOR FORWARD DELIVERY (ONE, TWO, OR THREE MONTHS) ON DEPOSIT OF TWENTY PER CENT.

FOREIGN BONDS—ARGENTINE—EGYPTIAN—RUSSIAN, TURKISH, SPANISH, PERU.

RAILWAYS—HOME AND FOREIGN.

SPECIAL BUSINESS in the above, and Fortnightly Accounts opened on receipt of the usual cover.

* THE WAK—The latest Telegrams from the SEAT OF WAR are received throughout the day, and also the course of the Markets from EVERY CONTINENTAL BOURSE.

JAMES H. CROFTS, 1, FINCH LANE, LONDON.

AQUARIUM, HOTEL, INSURANCE, AND MISCELLANEOUS SHARES.

SPECIAL BUSINESS in Brighton Aquarium, Royal Westminster Aquarium, Yarmouth Aquarium, Crystal Palace Aquarium, Milner's Safe, Telegraph Construction, Royal Insurance, Positive Assurance, Credit Foncier, Land Mortgage Bank of India, J. P. Westhead and Co., Palmer's Shipbuilding, Newcastle Chemical, Lawes Chemical, and others.

* BUSINESS TRANSACTIONS in all MISCELLANEOUS SHARES (of whatever description) having LONDON or COUNTRY MARKET VALUES.

JAMES H. CROFTS, 1, FINCH LANE, LONDON.

BRITISH LEAD SHARES.—BUSINESS in all leading Market Mines and Latest Special Information from the various districts.

JAMES H. CROFTS, 1, FINCH LANE, LONDON.

COTTON SPINNING SHARES.—BUSINESS in all OLDHAM SHARES, and in those of other DISTRICTS.

* SPECIAL BUSINESS in the following SELECTED SHARES:—

Name of Mill.	Last four dividends, per cent.	Closing quotations, June 29.	Buyers.	Sellers.
Central	20, 20, 10, 10	20, 20, 10, 10	20, 20, 10, 10	20, 20, 10, 10
Greenacres	30, 20, 4, 15	30, 20, 4, 15	30, 20, 4, 15	30, 20, 4, 15
Green Lane	25, 30, 25, 20	25, 30, 25, 20	25, 30, 25, 20	25, 30, 25, 20
Oldham Twist	35, 25, 15, 15	35, 25, 15, 15	35, 25, 15, 15	35, 25, 15, 15
Royton	30, 20, 10, 10	30, 20, 10, 10	30, 20, 10, 10	30, 20, 10, 10
Shaw	20, 16, 10, 16	20, 16, 10, 16	20, 16, 10, 16	20, 16, 10, 16
Star	25, 20, 8, 14	25, 20, 8, 14	25, 20, 8, 14	25, 20, 8, 14
Windsor	25, 20, 10, 16	25, 20, 10, 16	25, 20, 10, 16	25, 20, 10, 16

NOTE.—The shares of good Cotton Spinning Companies pay remunerative dividends, the mills being almost entirely conducted on the Co-operative System, under the Limited Liability Acts. With a revival in trade the present rate of dividends would be augmented.

JAMES H. CROFTS, 1, FINCH LANE, LONDON.

BANKERS: CITY BANK, LONDON; SOUTH CORNWALL BANK, ST. AUUSTELL.

ESTABLISHED 1842.

MR. WILLIAM H. BUMPUS, STOCK AND SHARE BROKER,
44, THREADNEEDLE STREET, LONDON, E.C.
[Established 1867.]

SPECIAL BUSINESS, at close prices, in the SHARES of all the principal HOME and FOREIGN MINES.

Shareholders, intending investors, and others who may be desirous of obtaining information and advice as to operations at the present time are requested to communicate.

FOR SALE, at prices annexed:—

20 Argentine, 25s.	20 Flagstaff, £2 11s. 3d.	150 Pestana, 7s.
20 Asheton, 25s.	10 Frontino, £2 1/2	50 Parys Mount, 11s. 6d.
10 Almada, 6s. 6d.	35 Glyn, 12s.	15 Roman Gravel, £10 1/2
25 Blue Tent, 15s.	25 Glenroy, 22s.	40 Rookhope, 21s.
60 Chontales, 8s. 6d.	40 Hingston, 10s.	40 Richmond, £8 8s. 9d.
10 Condes of Chilli, 23 1/2	20 Huila, 10s.	30 San Pedro, 14s. 6d.
6 Cape Copper, £23 1/2	100 I. X. L., 10s.	100 South Aurora, 5s. 6d.
10 Don Pedro, 12s.	50 Javali, 11s.	25 Sierra Buttes, 10s.
20 Derwent, £2 1/2	25 Kapanga, 11s.	10 Tankerville, £7 1/2
10 East Van, 45s.	50 Last Chance, 18s. 6d.	5 Van, £34 1/2
75 Exchequer, 7s.	15 Leadhills, 12s.	40 Van Consols, 11s. 6d.
15 East Lovell, 21s.	20 Marke Valley, 22s.	20 West Tankerville, 21s.
10 Eberhardt, £7 1/2	70 North Laxey, 21s.	5 West Chiverton, £16.
40 East Caradon, 15s.	20 Pateley Bridge, 28s.	50 West Asheton, 18s. 6d.

WILLIAM HENRY BUMPUS, SWORN BROKER.

Offices: 44, Threadneedle Street, London, E.C.

Business transacted in Stock Exchange Securities and Miscellaneous shares of every description. Fortnightly accounts opened. References given and required when necessary. A Stock and Share List forwarded free on application.

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SPECULATIVE ACCOUNTS opened on receipt of cover in RAILWAYS and FOREIGN STOCKS.

PURCHASERS of MINING SHARES should apply to Mr. COOKE, who can always supply at LOWEST PRICE NET.

CLOSING PRICES of RAILWAYS, FOREIGN STOCKS, and MINES, corrected to 5.45 P.M., ready DAILY.

JULY "SPECIAL INVESTMENT CIRCULAR," JULY number, will be ready NEXT WEEK. Application should be made at once, post free.

IMPORTANT NOTICE TO CLIENTS AND INVESTORS.—

Every Friday evening is published, in time for Evening Post, a WEEKLY EDITION of

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Containing latest prices and advices from Mines, with other valuable intelligence for investors.

Terms of subscription—12 months, 10s.; 6 months, 5s.; 3 months, 2s. 6d.

THE INVESTOR'S GAZETTE.—The THIRD Number of the New Series was published last evening. Every reader of the Mining Journal should subscribe.

ALFRED E. COOKE, 78, OLD BROAD STREET, LONDON.

ESTABLISHED 1853.

MR. JAMES STOCKER, STOCK AND SHARE BROKER,
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2, CROWN COURT, THREADNEEDLE STREET, LONDON, E.C.
[Established 1848.]

BUSINESS transacted in all kinds of STOCK EXCHANGE SECURITIES, also in every description of BRITISH and FOREIGN MINING, COLLIERY, MANUFACTURING, and other SHARES.

SPECIAL BUSINESS in the following:—

Aberdunant, 13s.	Glenroy, 21s. 6d.	Penstruthal, 6s. 6d.
Asheton, 24s.	Glyn, 11s. 6d.	Pandora, 2s.
Bamfylde, 15s.	Holmbush, 30s.	Parys Mount, 12s.
Bodidris, 21s.	Leadhills, 12s.	Rookhope, 21s. 6d.
Combella, £2 1/2	Ladywell, 18s. 9d.	Roman Gravel, £10.
Combmartin, 7s. 6d.	Llanrwst, 10s.	So. Roman Gravel, 8s. 6d.
Derwent, £2 1/2	Marke Valley, £1 1/2	Tankerville, £7 1/2
Devon Consols, £4 1/2	Monydd Gorddu, 10s.	Van Consols, 12s. 6d.
East Van, 45s.	North Laxey, 21s. 6d.	West Asheton, 17s. 6d.
Grosvinon, £3 1/2	Pateley Bridge, 28s.	West Chiverton, 15s. 6d.
Great Laxey, £2 1/2	Pennerley, 4s. 6d.	West Tankerville, £15 1/2
Argentine, £4 1/2	Exchequer, 7s. 3d.	New Quebrada, £2 1/2
Cedar Creek, 9s.	Flagstaff, 51s.	Port Phillip, 10s.
Condes of Chilli, 55s. 6d.	Frontino, £2 18s. 9d.	Richmond, £8 8s. 9d.
Chicago, 48s.	I. X. L., 10s. 6d.	San Pedro, 14s. 6d.
Chontales, 8s. 3d.	Javali, 7s. 9d.	South Aurora, 4s. 9d.
Don Pedro, 10s.	Last Chance, 6s. 9d.	Teocoma, 7s. 6d.
Eberhardt, £7 1/2	N. Zealand Kap., 48s. 9d.	United Mexican, 40s.

JAMES STOCKER, SWORN BROKER.

Consols, Foreign Bonds, Railways, Bank, Telegraph, Gas, and all miscellaneous Shares bought and sold, and fortnightly accounts opened for same. Shares sold for forward delivery on receipt of cover. List of prices and every information forwarded on application. References given and required when necessary.

BANKERS: LONDON AND WESTMINSTER.

MR. T. E. W. THOMAS, SHARE BROKER,
3, GREAT WINCHESTER STREET BUILDINGS, E.C.

The following are the latest prices at which business could be done. Where the difference between the buying and selling price is wide transactions may be effected at an intermediate price:—

Buyers.	Sellers.	Buyers.	Sellers.
Aberdunant, 12s. 6d.	14s. 6d.	Marke Valley, £1 1/2	£1 1/2
Argentine, £4 1/2	£4 1/2	North Laxey, 20s.	22s.
Ashton, 24s.	1 1/2	New Quebrada, £2 1/2	£2 1/2
Bamfylde, 15s.	1 1/2	New Zealand Kapanga, 1 1/2	1 1/2
Bodidris, 21s.	1 1/2	Parys Mount, 12s.	11s.
Devon Consols, 4 1/2	4 1/2	Pateley Bridge, 28s.	26s.
Dolcoath, 28s.	30s.	Pennerley, 4s. 6d.	5s.
Don Pedro, 11s.	13s.	Penstruthal, 6s. 6d.	8s.
Eberhardt, 7s. 6d.	7s.	Richmond, 8s. 6d.	6s.
East Caradon, 15s.	15s.	Roman Gravel, 10s.	10s.
East Van, 45s.	5s.	Rookhope, 21s.	21s.
Exchequer Gold, 6s.	8s.	San Pedro, 14s.	10s.
Derwent, 2 1/2	2 1/2	South Condurrow, 7s.	6d.
Flagstaff, 51s.	1 1/2	Tankerville, 7 1/2	7 1/2
Glenroy, 21s.	1 1/2	Tincoff, 13s.	15s.
Glyn, 10s.	12s. 6d.	Van Consols, 12s. 6d.	15s.
Great Laxey, 20s.	21s.	West Asheton, 17s.	16s.
Javali, 7s.	9s.	West Chiverton, 15s.	16s.
Last Chance, 6s.	9s.	West Tankerville, 15s.	16s.
Ladywell, 18s.	18s.	W. Grenville (call pd.), 1 1/2	1 1/2
Leadhills, 12s.	12s.		
Llanrwst, 10s.	10s.		

SPECIAL BUSINESS in Aberdunant, Llanrwst, Rookhope, North Laxey, and Gorseid and Merilyn. The latter mine is now extraordinary rich in lead ore. The sales, already in one month, are about to be materially increased. Holders will have immediate and good dividends.

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Their sources of information, Home and Foreign, being various and extensive, E. F. and Co.'s clients and the general public may place the most implicit confidence in their advice as they deem it their duty to give. Statements emanating from their firm will be founded only on well-authenticated facts, and may, therefore, be relied upon.

Orders or Telegrams for the Sale or Purchase, for cash or account, promptly executed on receipt.

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can sell the following SHARES, at prices annexed:—

60 Aberdunant, 12s. 6d.	25 Frontino, £2 18s. 9d.	25 New Zealand, £2 11 3
100 Almada, 6s.	30 Flagstaff, £2 11s. 3d.	40 Nth. Laxey, 21s. 6d.
20 Altam, 25s.	5 Fortuna, £5 1/2	10 Pennant, 45s.
10 Argentine, £4 2s. 6d.	20 Gorseid & Merilyn, 10s.	30 Pennerley, 4s. 6d.
40 Bodidris, £1 2s. 6d.	40 Glyn, 11s. 3d.	75 Penstruthal, 6s. 9d.
35 Colorado Ter., £1 1/2	75 Gold Run, 7s. 6d.	80 Port Phillip, 11s.
10 Cargill, £4 7s. 6d.	80 Great W. Van, 3s. 9d.	30 Parys Mount, 12s.
40 Chicago, £2 7s. 6d.	25 Great Dyliffe, £3 1/2	25 Rookhope, 21s.
30 Cakemore, £2 1/2	70 Glenroy, £1 1/2	15 Roman Gravel, £10 1/2
25 Combmartin, 7s. 3d.	70 I. X. L., 9s. 3d.	20 Richmond, £8 1/2
100 Chontales, 8s. 6d.	40 Last Chance, 11s. 6d.	30 Russia Copper, 38s. 9d.
20 Derwent, £2 11s. 3d.	50 Llanrwst, 10s.	5 Tankerville, £7 1/2
150 Don Pedro, 11s. 6d.	10 Leadhills, £6 2s. 6d.	20 Van Consols, 12s. 6d.
75 Exchequer, 7s. 6d.	80 Malabar, 5s.	30 West Goginan, 8s. 6d.
30 East Caradon, 15s.	80 Malpas, £5 1/2	30 W. Tankerville, 21s.
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50 Glenroy, 75 Exchequer, 80 Port Phillip.

90 Parys Mount, 40 Don Pedro, 60 Rookhope.

BUSINESS IN:—

30 W. Tankerville, £2 1/2, 40 Bamfylde, 40 Pennerley, 4s.

50 Llanrwst, 10 Milner's Safe, 25 Penstruthal, 6s.

20 Pateley Bridge, £2 1/2, 60 Van Consols, 50 Pandora.

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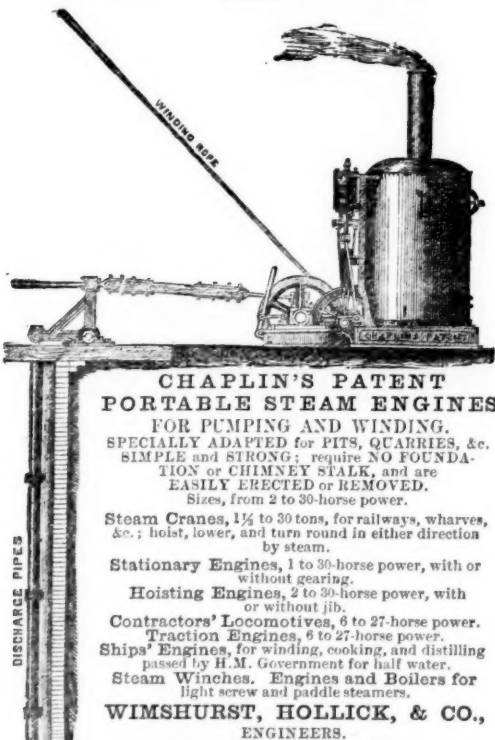
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PROSPECTUS.

In offering to the public such of the First Issues of shares in this company as re-
main unallotted, the directors are fully justified in believing the investment to be
one which will amply repay those who avail themselves of it.

The directors have hitherto abstained from advertising, or taking any of the other
modes usually adopted for the purpose of placing shares, and have preferred, with
the aid of a few personal friends, to carry on the workings on a somewhat limited
scale at their own cost, and to defer appealing to the public till a revival in com-
merce should render it an easy task to obtain the capital necessary to do justice to
the many and great points of interest in this eminently valuable property.
The time has, however, now arrived when they feel that the mine should be no
longer only partially worked, or in other words, starved, and that its intrinsic value
and promise have been so far established that no continuance of commercial de-
pression ought to prevent their receiving applications for a far greater number of
shares than they are now offering; and they have been the more impelled to this
conclusion by the discoveries made to the north of the Bell Abbey workings, the
numerous intersections of which are shown in the field marked B 315 on the plan
accompanying the prospectus.

In calling attention to the annexed reports, it is hardly necessary to say that it
would be impossible to find more talented, experienced, or reliable, as well as suc-
cessful, mining engineers than Mr. Walter Eddy, of Llangollen; and Capt. John
Kitto, of Llandudno, the manager of some of the most prosperous new mines in the
kingdom. And the directors have confidence that the very strong opinions ex-
pressed by these gentlemen in their reports, confirmed and supplemented as they
are by the letter kindly volunteered by Capt. William Kitto, manager of the rich
Foxdale Mines (whose thorough knowledge of the district and great ability render
him second to no living authority) must satisfy the public that the shares of this
company form an unusually sound and valuable investment.

The report of Capt. Richard Barsell, the company's mine agent, may also be im-
plicitly relied on as being the result of well-trained and mature judgment, based
upon careful daily observation.

By those who already know or will take the trouble to examine the property, no
reasonable doubt can be felt that with a liberal and judicious expenditure of capital
in developing the features which have now been established, it must speedily prove
itself to be a most valuable and lucrative mine, or rather series of mines.

The greatest care has been taken in laying out the workings and buildings, and
in securing the best class of engines, machinery, and other appliances, under the
superintendence of Mr. A. Francis, of Rhosdda, Wrexham, and in all these respects
the mine may challenge the severest criticism.

The property is now held under Crown lease at unusually low rents and royalties,
and has the special advantage of water power, which will obviate the necessity for
erecting additional permanent steam power to carry out proposed new workings.

The sett contains about 120 acres.
The purchase money to be paid by the company is £2000.
No promotion money will be paid.

The remuneration of the directors will be fixed by the shareholders in general
meeting.

In the event of no allotment being made to an applicant, his deposit will be re-
turned in full.

The deposit on application for shares may be forfeited, and the allotment can-
celled, by the directors in all cases where the further payment on allotment is not
duly made, in accordance with the terms of the allotment letter.

Copies of the Articles of Association, the surveyors' reports, the provisional agree-
ment, &c., can be inspected at the Solicitors' and the Secretary's offices.
The only contract entered into is one bearing date 1st March, 1876, between
Ralph Fawsett Ainsworth, M.D., Edward Wrangham Bird, Edmund Buckley,
and Francis James Eaton, as vendors, and William Charles Bew, as purchaser, on
behalf of the new company.

Prospectuses and Forms of Application can be obtained from the Bankers and
Solicitors, and at the offices of the company.
Applications for shares will be received by the company's Bankers.

REPORTS.

To the Directors of the Bell Abbey and Falcon Cliff Mines (Limited).

Isle of Man, April 30th, 1877.—GENTLEMEN: We inspected your mine on the
14th instant, and after careful consideration submit to you our report thereon, more
especially referring to what we advise as to the future workings. Your shaft is
sunk 72 fms. below adit, and levels driven for considerable distances north and
south, at intervals of 12 fms.

The lode is of great width, and the promising indications it showed almost at
surface, and the frequent bunches of ore (lead, copper, and blende) met with
throughout fully warrant, in our judgment, all the trials which have been made.
(The copper already sold by you, as well as that we saw in the mine and at surface,
is certainly of superior quality. The lead and blende we take as being about the
average of Manx ores.)

These bunches of ore have always occurred where the lode has become firm and
compact, but as it is disturbed by occasional slides and bands of shale—which may
possibly continue to some extent even in depth—we would advise you to let the
ore ground now laid open in the various levels on tribute (which would at the same
time be proving that part of the mine), and devote your principal energies to the
ground north and south, where your acquisitions of additional land, and trials at
surface, would appear to have established two distinct mines free from the dis-
turbances alluded to.

First, the South Ground: Having acquired an additional length of 300 yards,
which actually includes the great Dowke east and west lodes, at the junction with
which the principal part of the lead ore raised in the adjoining mine has been found,
you are now at liberty to resume your driving south, which had to be stopped
pending your negotiations; and we cannot doubt but that you will quickly meet
with at least equal success with your neighbours, the distance to be driven being
but short; and it is in exactly similar positions that all the productive mines in
the Isle of Man, particularly Great Laxey and Foxdale, have made their great
bodies of ore. In short, you cannot fail to intersect these great Dowke lodes, and
we have every confidence that you will meet with good and profitable discoveries
of ore in this direction.

Second, the North Ground: Here your tracing a newly-found ore-bearing lode
from the adjoining mine, through the field in your property marked No. 315 on
the large Ordnance map, has resulted in the discovery of at least three new lodes,
forming junctions with each other in positions leaving nothing in this respect to be
desired, and your trial pits prove them to be of the most promising character. As
you are equally impressed with ourselves of the great importance of this part
of your set, we need not say more, but cannot too strongly urge your commencing
operations without delay.

The entire property is very extensive, being about two miles on the course of the
main lodes. The machinery is in excellent working condition, and of the best con-
struction. New leases have been obtained on the most reasonable terms, and the
additional land to the south (to which reference has already been made) combine
to constitute it one of the most promising mining sites in the whole Island.

In conclusion, we have no hesitation in recommending you at once raising the
necessary capital to carry out the workings which we have indicated, and we be-
lieve that you will have occasion to be perfectly satisfied with the necessary ex-
penditure required to develop what you have a right to regard as a thoroughly
sound and promising mine.

WALTER EDDY, Mineral Surveyor.

JOHN KITTO, Manager of the Grogwinion, Wye Valley, Red Rock,
South Cwmystwith, St. Harmon, West Goginan, and other Mines.

Copy of Letter from Capt. WILLIAM KITTO, Manager of Foxdale Mines.

Isle of Man, May 5th, 1877.—DEAR MR. BEW: I have read Mr. Eddy's and my
Brother's report, and having been frequently through your mine, I can endorse all
it contains. If it errs, it is on the side of caution; but there is one point upon
which I think none of you lay sufficient stress—I mean the driving of your adit
northwards. I have often said to you that were I in a position I would risk my
own money here, trusting solely to what I could discover as payment or remun-
eration for my outlay, as to my mind courses of ore are sure to be found making up
to the surface, as they have done so close to you in the adjoining mine; besides
which, you have the advantage of the level as the natural drain. When you are
in a position to employ more labour, allow me to urge that this be one of your first
operations. I believe you may safely rely on the results.

WM. KITTO.

Bell Abbey and Falcon Cliff Mine, Colly, Isle of Man, May 5th, 1877.—DEAR SIR:

Capt. Eddy and Kitto having lately inspected your mine, I will confine my
remarks to our present operations and a few suggestions as to the future.

6th North.—The part of the lode we are carrying consists chiefly of spar, with
small cavities in it, some of which contains cubes of lead and murexite. The country
rock to the east is less broken than in some parts of the level outwards. This point
is of much interest, because it is immediately under the copper discovered in the
45 fm. level, from which we have had such good ore in bulk; but as the ore usually

dips north, the end is not sufficient advanced to catch it. Personally, I have strong
hopes of this.

45 North.—In the sole of this level a "stope" is being worked by four men south
from the sump which communicates with the 60, but this is pretty well exhausted,
as the ore ground is limited in this direction by the crossing of a strong lode
course. We are now making preparations to "stope" north. I would remark
here that it is from this section of ground we have been raising nearly all our copper.
Two men are employed in driving an intermediate level between the 45 and 60, off
from a rise 30 fms. north of shaft, with a view of proving a succession of short
bunches of lead that were passed through in both of these levels. So far the lode
has not been sufficiently productive to pay cost for driving; but some very good
patches of steel lead ore have been met with.

35 North.—There is a "stope" in the roof of this level worked by four men.
The lode is 4 ft. wide, mixed throughout with lead and blende ore, which can be
worked at a profit. This section of ore ground extends at least 15 fms. in length,
and is looking a great deal better going up. From this stope we have a large pile
of ore stuff, which we are now in the course of dressing.

24 South.—The drainage of this level has been recently resumed, and on account
of its being in the immediate neighbourhood of several known lode courses, which
have caused the lodes in the adjoining set to be productive of good ore, we may
reasonably expect that it will be successful. The lode in the forebrest is well de-
fined, and presents a very encouraging appearance. Not far from the present end
there is a shaft sunk in the Glen by former parties, in which there is said to be a
good rib of lead. This we shall quickly prove.

Adit Level.—Exploratory operations constitute an important element in the
opening out of mines, and judging by the results of our neighbour's working in
an exactly similar position, I would strongly recommend its further extension
northwards at once.

I would beg to call your attention again to one or two undeveloped points, espe-
cially to where some trials were made some time since, about the centre of your
ground, marked 315 on the Ordnance map. Three very strong lodes were dis-
covered forming junctions within an area of a few fathoms. Every miner knows
that it is at these intersections that success as a rule is secured, and I really hope
you may, without further delay, instruct me to begin developing property upon a more
extended scale. With your intimate knowledge of the nature of the various lodes,
you at least cannot doubt the result.

MR. WILLIAM C. BEW.

Extract from Report, 12th May, 1877.

I am glad to tell you the stope in the roof of this level (the 35) is gradually
improving going up. I never saw it looking so well as it is to-day, and the men
say they never saw anything in the mine so good.

Dressing: We are getting on with this—crushing the copper to-day, and have
a good pile of lead broken up for crushing.

Extract from Report, 21st May, 1877.

24 North: I put two men here to-day, and find there is some very nice lead in
the roof. No doubt is a continuation of that we have in the 35 stope.

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culties by compromise, and in disposing of undeveloped mining property when held
at real value; offers his assistance for securing undeveloped mining properties at
home prices. As to care taken in reporting, reference is made to the *Mining Journal*
Supplement, April 1, 1876, containing report on property of the Maxwell Land
Grant and Railway Company; as to technical standing, to the prominent men of
the trade—compare *Mining Journal* of Aug. 3 and Nov. 31, 1872, and *New York*
Engineer and Mining Journal, Feb. 28, 1874.

W. F. LOWE, F.C.S.,

Associate of the Royal School of Mines,

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TO MINING AGENTS, AND OTHERS.—An

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Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES—No. XXXI.*

BY J. CLARK JEFFERSON, A.R.S.M., WH. SC.,
Certificated Mining Engineer.

(Formerly Student at the Royal Bergakademie, Clausthal).
[The Author reserves the right of reproduction.]

SECTION II.

PROSPECTING FOR MINERALS—BORING.

III.—THE BORING OPERATION.

REMOVAL OF OBSTACLES WHICH OCCUR OR ORIGINATE DURING THE BORING.

MESSRS. MATHER AND PLATT'S ROPE BORING APPARATUS.—The distinctive features of this invention are the surface arrangement for giving the percussive action to the borer, and the construction of the borer or boring head, and of the sludger for clearing the bore hole. The rope used is a flat hempen rope, $\frac{3}{4}$ in. broad and $\frac{1}{2}$ in. thick. The rope (from which the borer is suspended) is wound round a large drum, driven by a horizontal engine with re-rolled motion, through the intervention of spur gearing. The winding drum is about 10 ft. in diameter, and capable of holding 3000 ft. length of rope of the above size. The engine is firmly belted on an iron framing, the cylinder being nearest and the winding drum the farthest from the bore hole. On leaving the drum the rope passes beneath a guide pulley, and then vertically upwards, the tip of the piston in rod of a vertical single acting steam cylinder. The top of the piston rod is about 15 in. diameter, the piston rod cylinder for deep borings is about 15 in. diameter, the piston rod being cast on; the diameter of the pulley is about 3 ft., and the width between the flanges being made to suit the width of the rope.

When the borer has been lowered off the winding drum to the bottom of the bore hole, that portion of the rope between the guide pulley and the vertical pulley, and which passes through a screw clamp, is screwed tight at that length. When steam is admitted into the cylinder beneath the piston the vertical pulley is raised, and consequently also the boring tool. On reaching its highest position the exhaust valve is opened, and the piston rod and highest pulley fall, allowing the borer also to fall freely (or nearly so) to the bottom of the bore hole. The inlet valve communicates with the steam cylinder at the bottom, the exhaust valve, however, about 6 in. above the bottom, so that there is always an elastic cushion of steam on which the piston falls. Of course, it will be understood that the piston does not meet with the cushion of steam before the borer reaches the bottom of the bore hole. The steam and exhaust valves are worked by a self-acting tappet motion, so that a rapid succession of blows of the boring tool on the bottom of the bore hole are thus occasioned. As it is necessary that a motion should be given to the piston before it can act upon the tappet, a small jet pipe is inserted in the bottom cover of the steam cylinder, so that a small jet of steam is allowed to be constantly blowing into the cylinder, which causes the piston to move slowly at first, whilst taking up the slack of the rope and weight of the borer, without a jerk. The tappet which works the steam valve lever is moved by an arm attached to the piston rod of the vertical cylinder after the piston has risen to a proper height, when the tappet is made much more quickly. Just as the borer reaches its highest position another tappet is caught by the arm fixed to the piston rod, and closes the steam valve, a tappet on the opposite side at the same time opens the exhaust valve, allowing the steam to escape, and the borer and rope pulley to fall. The fall can be regulated by a weighted valve on the exhaust pipe, checking the escape of the steam, so as to cause the descent to take place slowly or quickly. By altering the position of the tappets the stroke of the piston can be varied between 1 ft. and 8 ft., and, therefore, the fall of the borer (which is evidently twice the length of the stroke) between 2 ft. and 16 ft., according to the character of the ground to be bored through.

The borer—or boring head, as it is called by the inventors—consists of a wrought-iron bar, about 5 in. diameter and 8 ft. long, to the bottom of which a cylindrical cast-iron block, to which the cutters are attached, are secured. The cutters have square taper shanks which fit in corresponding holes in the block, and about with a collar on the under side of the cylindrical block, and are prevented from working loose on the upper side by means of two nuts, which screw on to the top ends of the cutter shanks. By this arrangement the cutters are firmly and rigidly secured to the block, whilst at the same time it readily admits of their being detached for repairing or sharpening.

A little above this block another cylindrical casting is attached to the bar, and acts as a guide to the bar, keeping it vertical during its descent. Towards the upper end of the bar a second guide is attached, on the circumference of which cast-iron plates are attached having ribs of a saw-tooth or ratchet shape, the one half catching only in one direction (i.e., each alternate rib), and the other alternate half catching only in the opposite direction. These ribs are placed at an inclination like segments of a screw thread of very long pitch, so that they bear against the rough sides of the bore hole, whilst the bar is being raised or lowered they assist in turning it, and as each alternate plate has the projecting ribs inclined in the opposite direction one half of the ribs tend to turn the bar round in rising, and the other half in the same rotary direction during the descent. This arrangement is not an essential one, but simply auxiliary to an arrangement placed immediately above to secure a definite rotation for causing the cutters to strike in a fresh place after each blow.

This arrangement consists of two wrought or cast iron collars placed or catted to the bar near its upper end, and placed about 12 in. apart from each other; the under face of the upper collar and the upper face of the lower collar being formed with deep ratchet teeth of 2 in. pitch, the vertical sides of the teeth of the upper collar being set exactly in line with those on the lower collar. The inclined sides of the teeth of the upper collar are inclined downwards from left to right, and those on the lower collar downwards from right to left. Between these two collars is a bush, about 8 in. deep, which slides freely on the neck of the long vertical bar, and having corresponding ratchet teeth on both its upper and lower face, the teeth on the upper face, however, being set half a tooth in advance (or behind, which amounts to the same) of those on the lower face, so that the perpendicular side of each tooth on the upper face of the bush is directly above the centre of the inclined side of a tooth on the lower face, and *vice versa*, the perpendicular side of each tooth in the lower face is directly beneath the centre of the inclined side of a tooth in the upper face.

The bush is provided with two short cylindrical trunnions, of about 6 in. diameter, over which the two ends of a strong wrought-iron bow pass, which is attached by means of a hook and short iron chain to the end of the flat rope, so that the whole boring bar is suspended directly from the bush. The regular and constant rotation of the bar then is effected as follows. When the borer has fallen to the bottom of the bore hole the bush (from which the borer has been suspended, and which has had its upper teeth engaged with those on the under side of the upper collar during the ascent of the borer) falls, with the teeth on its under side upon those on the lower collar, and thereby receives a twist backward through the space of half a tooth, and on commencing to lift again the teeth on the upper side of the bush catch against those on the upper collar, and receive an additional twist backward through the space of half a tooth. This flat rope is thus twisted backwards to the extent of one tooth of the ratchet, and during the time the borer is being raised untwists itself again, thus rotating the borer forward through the space between each successive tooth between each successive blow of the tool on the bottom of the bore hole. It will thus be evident that the bar with the cutters makes a complete revolution in as many blows as there are teeth on either of the collars, and this again depends on the pitch of the ratchet teeth.

* Being Notes on a Course of Lectures on Mining, delivered by Herr Bergsrath, Dr. von Gumboldt, Director of the Royal Bergakademie, Clausthal, The Harz, North Germany.

The general working of the apparatus is as follows. When the borer has been attached to the end of the rope its weight is sufficient to pull round the drum of the winding engine, and by means of the break it is lowered steadily to the bottom of the bore hole, the lowering being at the rate of 150 yards per minute. The rope is then clamped tight by screwing up the clamp between the guide pulley and the vertical pulley. The small steam jet which enters in the bottom cover of the cylinder is then turned on, and the rise and fall of the piston (and consequently of the borer) is then regularly and automatically performed, an average of 24 blows per minute being obtained. When a sufficient quantity of debris, &c., has been produced at the bottom of the bore hole the steam is shut off, the rope unclamped, and the winding engine set in motion, the boring tool being wound up at the rate of 100 yards per minute. The clamp which fixes the rope is made with a slide, and has a nut fixed to it. Through the nut a long screw passes, which on being rotated raises the clamp, and by this means the rope can be paid gradually out, to keep pace with the advance of the borer, during the time that the apparatus is being worked. As an elastic stretching of the rope, to the amount of 1 in. per 100 ft., takes place it is necessary to increase the lift of the borer as the bore hole gets still deeper. This is effected by raising the top pair of tappets on the tappet rods. When the borer has been raised to the surface it is slung from a hook attached to a roller mounted on an overhead suspension bar, so that it can be run sideways clear of the bore hole.

At Middlesbrough a bore tube 18 in. in depth was sunk with this apparatus to a depth of 1312 ft. in 390 working days of 12 hours each; the first 600 ft. were bored in 100 days on an average of 6 ft. per day, the strata being composed of red sandstone and limestone. At Manchester a bore hole, 466 ft. deep, 24 in. diameter at the surface, and reduced to 15 in. diameter at the bottom, was bored in 95 days (including Sundays) of 12 hours, or on an average of 5 ft. per day. The strata were as follows:—first, 100 ft. of red sandstone, 220 ft. of red and variegated marls, 43 ft. of coarse gravel and pebbles, 20 ft. of compact red and white sandstone, and 73 ft. of red and purple marls. At Birkenhead a bore hole 18 in. diameter throughout, the first 100 ft. being red and yellow sandstone, and the rest white marl and sandstone, was sunk to a depth of 322 ft. in 61 days, as above, giving an average of 5 ft. 3 in. per day. At Halifax a 15-in. bore hole was put down to a depth of 330 ft. in 100 days through hard flagstone, giving an average of 3 ft. 4 in. per day. This method is not recommended for depths under 200 ft., owing to the expense of engines, &c., at the surface. In the case of hard ironstone, &c., being passed through, the average progress is about 18 in. per day.

As the instruments used by Messrs. Mather and Platt in case of breakage of the rope, or jamming fast of the borer, have been devised specially for their rope borer, they will be best described here, as well as the mode of operation. In case of a jamming fast of the borer, all the strain possible is then put on the rope, which if it be old or rotten may break. In this case the claw grapple is then lowered to lay hold of the broken rope. The claw grapple consists of a cylinder open at the bottom, the upper end being cast solid. Two short upright rods are let in, or catted, to the solid end of the cylinder. To the upper end of one of these a short cross bridge is hinged, and which is prevented being raised above a horizontal position by the hooked end of the other rod. Through a hole bored in the solid end of the cylinder a strong round wrought-iron bar passes, to the bottom end of which a short cylindrical block is catted. The three claws are hinged to lugs formed on the under side of the block, having the portion above the hinge inclined upwards and outwards, to allow of which the cylindrical block has three corresponding slots. The lower ends of the claws are either hooked or serrated. The cast-iron cylinder is also provided with three slots a little above the bottom, the upper end of the slot being inclined downwards and inwards, so as to suit the upper edge of the claws above the hinge. The upper end of the long bar passing through the cylinder has a long chain link. During the lowering the grapple is suspended from the short hinged cross bridge (the chain link attached to the bar being sufficiently long to allow the bridge to pass through the link), so that the whole weight of the cylinder is carried directly from the suspending link, the bottom end of the slit pressing upwards against the three projecting or curved ends of the claws, thus keeping the lower ends of the claws apart. As soon as the grapple rests upon the broken rope below, the suspending link, which catches beneath the hinged bridge, continuing to descend allows the bridge to fall out of it, so that on raising the grapple again the suspending link (from the rope) catches beneath the end of the long link (in which the long round bar passing through the cylinder terminates), and the whole weight of the cylinder now rests on the upper edge of the curved ends of the claws, forcing the lower ends tight inwards, so as to close in on the broken rope and hold it securely. When the grapple is hauled up sufficiently to pull the broken rope tight, and wrought-iron rods, 1 in. square, with hooks attached at the bottom are let down to catch hold of the bow of the lever, two powerful screw jacks are applied to the rods at the surface. If the borer cannot be readily recovered in this manner the attempt is abandoned, and it is got out of the way by breaking it in pieces. When this is the case the rope must first be cut off near the bottom, which is effected with a flap grapple, the edges of the flaps being made sharp so as to cut the rope. The breaking up tool is a solid cylindrical bar, weighing about 1 ton, and having two straight cutters at right angles at its lower end. The raising and lowering of this breaking up bar during the operation is effected by the vertical cylinder.

Within the last 15 or 20 years this method of boring with a rope has received considerable attention on the Continent, resulting in several decidedly practical improvements. It will be evident that a rope could have been equally well substituted for the rigid rods where the free-falling apparatus are used, were it not that there is then no provision for the gradual rotation of the borer, so as to cause the cutter to strike the ground in a fresh position after every blow. As early as 1860 George Kolb succeeded in sinking a bore hole 12 in. diameter by this method through the Rothliegende at Baireuth, and is said to have obtained excellent results.

The rotation of the borer was effected by inserting an india rubber collar and an iron collar between the borer and the swivel attached to the end of the winding rope. The surface arrangements consisted of a vertical direct-acting percussion steam cylinder and an horizontal winding engine. The essential part of Kolb's borer consisted in the manner in which the gradual rotation of the borer was effected. When the borer attached to the end of the rope is raised the rope untwists itself through an arc, depending on the length of the rope and the weight of the borer. With a length of 60 feet it was found that the rope untwisted itself through a quarter of a circle; when the borer has descended and struck the bottom of the bore hole the weight is taken off the rope, and if a loose swivel has been inserted between the borer and the rope, the rope will twist itself back again through 90°, so that by each lift of the rope the borer is rotated through 90°, and four blows suffice for a complete rotation of the borer. In order that a bore hole shall be perfect round and vertical it is necessary that at least from 20 or 30 blows should be given during a single rotation of the borer, to effect which Herr Kolb made use of the following arrangement:—To the head of the borer a cylindrical neck piece is catted; the upper end of the neck piece is turned down to about one-third the diameter of the lower end, the extremity of which is screwed. Over the upper end of the neck a deep ring of india rubber is passed, the outside diameter being equal to that of the lower end of the neck, and the inner diameter just fitting the upper turned end of the neck. On the top of the india rubber ring one or two steel washers or collars are placed, their inner and outer diameters being the same as those of the india rubber ring. On the top of the steel collars the swivel to which the rope is attached is placed; a nut which is screwed on to the screwed end of the neck, and afterwards fastened by a split pin to prevent its shaking loose, completes the connection.

When the borer strikes the bottom of the bore hole, the swivel on account of its inertia, continues to move for an instant before being brought to rest, compressing at the same time the india rubber ring, during which it is released from contact with the nut, and has thus the opportunity for an instant of giving way to the twist of

and rotating with the rope, through an arc of a circle depending on the length of time during which the swivel is freed from contact with the nut, which latter depends on the tightness with which the india rubber ring is compressed before the blow is struck. The degree of compression is readily altered by varying the thickness of the steel washers (i.e., by inserting washers of different thicknesses). When the india rubber ring is not compressed the swivel is virtually loose, and the borer is rotated too much; on the other hand, when the india rubber ring is tightly compressed, so that the swivel is virtually fast to the borer it is not rotated at all. In order to ascertain and control the rate of rotation a mark is made on the swivel and borer or neck piece when it is first lowered, and after ten successive blows the borer is again raised, and the position of the two marks is noted. If the rotation is too much a thicker, and if too little a thinner washer is inserted in place of the first. The following are some of the dimensions in Kolb's arrangement:—Diameter of india rubber ring, 7.2 in.; height of ditto, 4.8 ft.; diameter of upper part of neck-piece, 2.4 in.; weight of swivel (the inertia of which compresses the india rubber ring when the borer suddenly comes to rest at the bottom of the bore hole), 33 lbs. In the Rothliegende, Kolb averaged 12 ft. advance in 24 hours, and in a favourable case obtained a maximum advance of 20 ft. in the same time, one of the bore holes executed being 1600 ft. deep.

INSTITUTION OF CIVIL ENGINEERS—PREMIUMS AWARDED. SESSION 1876-77.

The Council of the Institution of Civil Engineers have awarded the following Premiums:—

- 1.—A Watt Medal, and a Telford Premium, to WILLIAM WORRY BRAUMONT, Assoc. Inst. C.E., for his Paper on "The Fracture of Railway Tires."
- 2.—A Watt Medal, and a Telford Premium, to WILLIAM CANTHORSE UNWIN, B.Sc., Assoc. Inst. C.E., for his Paper on "The Resistance of Boiler Flues to Collapse." (Mr. Unwin has previously received a Telford Medal.)
- 3.—A Telford Premium to ROBINSON SOUTTAR, for his Paper on "Street Tramways."
- 4.—A Telford Premium to ISAAC JOHN MANN, for his Paper on "The Testing of Portland Cement."
- 5.—A Telford Premium to WILLIAM ANDERSON, M. Inst. C.E., for his "Experiments and Observations on the Emission of Heat by Hot water Pipes."
- 6.—A Telford Premium to JOHN BALDREY REDMAN, M. Inst. C.E., for his Paper on "The River Thames."
- 7.—A Telford Premium to HENRY ROBINSON, M. Inst. C.E., for his Paper on "The Transmission of Power to Distances."
- 8.—A Telford Premium to ALEXANDER McDONNELL, M. Inst. C.E., for his Paper on "The Repairs and Renewals of Locomotives."
- 9.—A Telford Premium to RICHARD HENRY BRUNTON, M. Inst. C.E., for his Paper on "The Japin Lights."
- 10.—The Manby Premium to CHARLES NORMAN BAZALGETTE, Barrister-at-Law, for his Paper on "The Sewage Question."

The Council have likewise awarded the following Prizes to Students of the Institution:—

- 1.—The Miller Scholarship to PERCY RUSKIN ALLEN, Stud. Inst. C.E., for his Paper on "Machine Tools."
- 2.—A Miller Prize to ARTHUR CAMERON HURTZIG, Stud. Inst. C.E., for his Paper on "Submarine Foundations."
- 3.—A Miller Prize to CHARLES GRAHAM SMITH, Stud. Inst. C.E., for his Paper on "The Reserve Floating Landing Stage and Piers at Birkenhead."
- 4.—A Miller Prize to RICHARD JOHN GIFFORD REAP, Stud. Inst. C.E., for his "Comparison of the Merits of Wrought-iron Plate and Trussed Girders for Single-span Railway Bridges."
- 5.—A Miller Prize to NICHOLAS WATTS, Stud. Inst. C.E., for his Paper on "Mechanical Puddling in the Manufacture of Iron."
- 6.—A Miller Prize to WILLIAM JAMES CHALK, Stud. Inst. C.E., for his Paper on "Waves, and on Structures designed to resist their Force."
- 7.—A Miller Prize to JOHN CHARLES MACKAY, Stud. Inst. C.E., for his Paper on "Engineering Explosives."

THE UTILISATION OF PEAT.

The question how to make the vast beds of peat in this country a valuable article of commerce has engaged for many years the attention of some of our best scientific men, and while all admit that for smelting iron, steam, domestic, and many other purposes, compressed peat has innumerable advantages over coal, yet no one seems hitherto to have hit on a sufficiently simple and expeditious process whereby peat fuel could be made a paying commodity, notwithstanding the important fact that the peat deposits are comparatively inexhaustible. The great difficulty hitherto has been found in dealing with the large quantities of air and water contained in the peat when dug, which no amount of pressure would remove, whilst evaporation has proved itself by far too slow a process to mature. Various experiments have from time to time been made, and the employment of most expensive machinery resorted to which, from the results, has proved to be of too complicated a character to be of any practical commercial value. Prof. Murratt says, in speaking of the vast resources of wealth lying in our peat deposits—"Any scheme by which a cheap and wholesome heat-producing article can be obtained should receive every encouragement, and the man who is successful in this should and would obtain a most substantial recognition of his achievement at the hands of the nation."

It is a matter of surprise that the Government has not yet offered a premium to those who could succeed in utilising the enormous peat beds of Dartmoor, but the lack of this stimulant has not prevented the prosecution of scientific research, which has been carried on with much spirit, but not without a large expenditure of time, trouble, and money in arriving at a satisfactory solution of this most valuable and important problem. The introduction of a new good and cheap fuel will be of the greatest advantage to the nation, affecting not only the interests of the high, low, rich, and poor, but a large and valuable portion of manufacture and commerce. For the important and successful method of producing peat fuel in a desirable, economical, and commercial form we shall be indebted to the enterprising energy of Mr. John Howard, F.R.G.S., and Associates of the Institute of Civil Engineers, of Topham, Devon, to whom the credit, honour, and we hope the reward for producing cheap and economical peat fuel is likely to fall. By Mr. Howard's process all expensive machinery is entirely avoided, the air and water rapidly extracted, leaving the peat hard, dry, and dense, without any of that deterioration caused by heat or slow drying, the gases being held so lightly in best black peat that as much as 20 to 30 per cent of the gas-ous properties escape when drying. We have before us a sample of peat fuel, prepared by Mr. Howard's process, as hard and as heavy as coal itself, and can be handled without soiling the hands. We hope shortly to lay before our readers more particulars respecting this important discovery; for, considering the great demand there must necessarily be for the article, and the vast resources of Dartmoor, which has in itself an area of 35,000 acres, where there are inexhaustible deposits of peat in some parts 30 ft. in depth, no difficulty will be experienced in an undertaking like this in forming, if required, a powerful company to prepare the article, which must prove a boon to the public, and a profit to the proprietors.

JOINING IRON AND STEEL WIRE.—In manufacturing guides for coal and other pits, colliery ropes, telegraph wire, telegraph cables and fencing, and in other manufactures, it is often necessary in order to obtain wires of the required length to join two or more lengths of wire together, end to end, and this is ordinarily done by the process of welding. But in welding together wire of iron or steel the metal is frequently so injured during the welding process that the junction formed is very weak, and the wire is liable to break at the welded part. The object of the invention of Mr. W. HINELL, of Birmingham, is to produce wires of iron and steel of any required length, having at the joined part a strength equal to any other part. He cuts away a portion of the end of each wire, so as to give it a semi-cylindrical figure, the said cutaway portion extending about 1 in. from the end of the wire. The extreme ends of the wires may terminate in planes at right angles to the axis of the wire, but he prefers to incline each end so as to give it a wedge shape, the thin end of the wedge terminating in the axis of the wire. When he thus inclines the ends of the wire, he makes the shoulders terminating the cut away parts of an under cut figure, so that the wedge-shaped end of one wire when the ends of the two wires are fitted together shall engage with the under cut shoulder of the other wire. The ends of the wires thus shaped he connects together by the process of brazing or hard soldering, and the junction formed has a strength equal to that of any other portion of the wire. In wires of small diameter he prefers to give to the ends to be joined an inclined figure

simply—that is, he cuts or otherwise forms on each of the ends to be joined a plane, making but a small angle with the plane in which the axis of the wire is situated. The two plane inclined ends are joined by hard soldering or brazing. Although in practice he has found that planes of about 1 in. in length formed on the ends of the wires answer very well, yet he does not limit himself to the use of these proportions.

Original Correspondence.

WHEEL GRENVILLE.

SIR,—Had "Shareholder" in the Journal of the 16th inst., confined himself simply to the question of appointing a purser at Wheel Grenville, his letter would undoubtedly have had more weight than it has at present; for by conveying such insinuations (not easily answered, because of their "vagueness") as he does respecting Capt. Hodge and his son plainly proves that malice was the inspirer of the epistle. His first argument, that our "monthly expenditure" is increasing very "seriously," plainly proves him to be a man of great sagacity; for to build a new engine-house, to erect a new 80 in. cylinder pumping-engine therein, and to entirely renovate the whole mine without greatly increased monthly cost would, I believe, be quite beyond the capacity of the purser whom "Shareholder" would like to see appointed, "unless," indeed, he applies for the post himself, and give the adventurers the benefit of his splendid abilities.

The ordinary working cost of the mine is much the same as usual, and the increased expenditure is entirely owing to the new and important works mentioned above. The purser wanted to make our accounts look better with our present limited stamping power, and to send the adventurers home with more cheerful faces is a better price for tin; and if this took place we should cease to be troubled with such epistles as a "Shareholder" favours us with in the present instance.

In the second portion of his letter he writes in a strain calculated by him to give the public the impression that Capt. Hodge and his son are incompetent to do the duties they have entrusted them; now about this I will say nothing, and should not have touched this part of his letter at all had he stopped there, owing to the fact that our worthy secretary, Mr. Laws, takes on himself to a large extent the duties of a purser, and carefully examines every bill before it is paid, and indeed generally pays them personally, but when shareholders go on to hint that we are unworthy of the trust placed in us by the general body of the adventurers, I think an answer is wanted.—First, as to short weights, if a purser were appointed it would devolve upon the agent of the mine to check all weights, so we should be no better off than we are now; moreover, a manager who advises his employers to erect a weigh-bridge for checking weights is not a man likely to accept a bribe for overlooking such a thing.—Secondly, "Shareholder's" hints as to "back-heesh" are such as are generally resorted to by anonymous correspondent, who do not care to let their names appear to substantiate what they write, perhaps because they think that would not add to the weight of the assertion.

"Shareholder" has skillfully concealed his imputations, and made them so vague as to be impossible to give them a definite answer, or an emphatic denial, and I think the facts already touched on will plainly show their worthlessness, and, indeed, that of the whole letter.—*Camborne, June 27.* FRANCIS HODGE.

P.S.—Allow me to state I shall decline to answer an anonymous correspondent again on the subject. Of course the question of appointing a purser rests with the shareholders, but a question of personal reputation rest with those attacked. F. H.

EXCHEQUER GOLD AND SILVER MINING COMPANY.

SIR,—Upon the question now under discussion in the Journal concerning the permanency of silver mines in depth, will you permit me to quote the following from a recent issue of the San Francisco Stock Report:

THE PERMANENCY OF MINES.—There is a great deal of talk just now by interested parties of the "permanency of the Comstock," and similar misfortunes which, according to them, are even now imminently threatening this coast. We do not know what attention such idle talk as this may have received from unthinking or uninformed people, but for the comfort of those who are really interested in the future of this coast, and are in anywise disturbed by remarks of the kind, we will say that all such talk is the merest bosh, and those who utter it know that it is, if they know anything. There is no such thing known in the history of the world as a silver mine, that is a real silver mine, becoming exhausted. It may vary in its yield, it may go up or down, the vein may be momentarily lost, but it will appear again. People might as well talk of exhausting a living well by drawing a few gallons of water from it, as of exhausting a silver mine by any such mere surface scratchings as have yet been accomplished. Dame Nature when she disposed of her treasures piled them up very high; the top of them we know, but nowhere has mankind ever yet reached the bottom of her storehouse. The silver mines of Thrace and Thessaly, which were being worked in the time of Herodotus and before it, are producing bullion to-day. There is no doubt but that the Comstock lode is a true fissure, and may be worked indefinitely, according to all experience, without exhaustion. It is well known that the deeper the explorations in such lodes as the Comstock the ore-bearing quartz is less broken, better defined, and richer. So far as explored we have in the Comstock the richest lode ever uncovered. Experience tells us we may go steadily sinking into its depths, and we are able at any moment to uncover another, and when that is exhausted another stratum of the richest ore. There is no fear of the "bottom dropping out of the Comstock," as those who, for interested motives, profess to believe will happen, probably know to the full as any of us.

The above facts are especially pertinent just now, when there appears to be so much misconception in England as to the permanency of silver mines in depth.

June 28. A SANGUINE EXCHEQUER SHAREHOLDER.
[For remainder of Original Correspondence see this day's Supplement.]

SAFETY VALVES.—With a view to utilise the steam-pressure as a means of retaining the safety-valve upon its seat, and thereby wholly or partially dispensing with the weights, springs, or levers ordinarily required, and also obtaining a freer escape for the steam so soon as a given maximum boiler pressure has been exceeded, Mr. F. W. SHOREY, of Plaistow, proposes to employ a box or chamber in communication with the steam space of the boiler, and situate—say, for example, upon the top thereof, which box or chamber is provided with two outlets, by preference in a line with and opposite each other, over which he fits two valves mounted on one and the same spindle or body, so that they will act in unison. One of the valves—the lower one, when they are arranged the one over the other, is made of less area than the other or upper one, so that when the steam-pressure in the boiler is below the required maximum, and consequently insufficient to lift the upper valve, it will, by acting upon the lower valve, maintain or assist in maintaining the compound or double valve upon its seats, whilst so soon as the said maximum pressure is reached the lower valve will be lifted, and simultaneously raise the lower valve, thereby opening the outlets for the escape of steam, and thus more promptly relieving the excess of pressure, the outlets being subsequently closed by the return of the compound or double valve to its seats, and maintained in that condition by the pressure of the steam upon the lower valve with or without the assistance of auxiliary means until maximum pressure is again exceeded. It is obvious that although he has described a single compound safety valve only as used in combination with the said box or chamber, yet the safety-valves may be employed in duplicate or in any required number—that is to say, two or more of such compound or double valves may be employed in conjunction as in the case of ordinary safety-valves.

CHEMICALS, MINERALS, AND METALS.—Messrs. J. Berger Spence and Co. (June 29).—Acetate of Lime, 9s. 10s. per ton.—Alumina, 4s. 15s. for loose lump; ground, 7s. 15s.—Aluminous cake, 4s. 10s.—Ammonia: Sulphate, grey, 13s. 5s.; best London white, 13s. 10s.; muriate—white, 27s.; red ammoniac, 45s.; second, 44s.—Acid: Tartaric, English, ground or crystal, 1s. 5s.; foreign, 1s. 4s.; crystals, oxalic, 5s.; sulphuric, 3s. 10s. to 3s. 15s.; picric acid, 1s. 6s. 1d. per lb.—Arsenic: New Consols make 8s. 10s.—Bleaching Powder: At 5s. 5s.; for the whole of the year 1877, 6s.—Litharge: Best flake, 24s.—Metalliferous Salts: Iron salts, green and rusty copperas, 5s.; in casks or barrels, 60s.—Copper Salts: Sulphate of copper, 22s. 15s.—Magnesia: Epsom salts, 3s. 5s.—Nitrate of Soda: 1s. 6d. 1s. 4d.—Potash: Murates, 80 percent, at 6s. 6d. f.o.b.; Frustate, yellow, 10s. 4d.; chlorate, 9s. 4d.; bicarbonate, 4s. 4d.; Soda: Soda ash, 60 percent, 12s.; white, 60 percent, 12s. 7s. 6d.; soda ash, 13s. 4d. to 13s. 4d.; soda crystals, 4s. 5s.; 14 carbonate, 11s.; salt cake, 2s. 1s.; Glauber salts, 2s. 15s.—Sugar of Lead: Brown, 26s.; grey, 30s. 10s.; white, 37s.—Brimstone: Best thirds, 5s. 7s. 6d.—Chins-clay: 15s. f.o.b. Cornwall; "Rosemellyn," 24s.; "BM," 34s.—Iron Ore: Hematite, 16s. to 22s. 6d.; Algerian, 53 percent, 14s. f.o.b.—Manganese: Ores, 90s. for 70 percent.—Pyrites: Spanish cupreous, 5s. 4d.; non-cupreous, 5s. 4d.—Phosphate of Alumina, 3s. to 3s. 10s. per ton.—Phosphates: High strength, 80 to 85 percent, 1s. 4d. to 1s. 5d. per unit; Extremadura, 1s. 3d.; ordinary, 60 percent, 1s.; precipitated phosphate of lime, 70 percent, 5s. 15s.—Iron: Middleborough Pig Iron, No. 1, 47s. 6d.; No. 2, 42s. 6d.; No. 3, 40s. 6d.; No. 4 (foundry), 41s.; No. 4 (forged), 40s. net.—Hematite, No. 1, 70s.; No. 2, 67s. 6d.; No. 3, 64s. 6d.; No. 4, 64s. 6d.; No. 5 (mottled and white), 64s. 6d.; Bessemer, No. 1, 70s.; No. 2, 67s. 6d.; No. 3, 65s.; less 2s. p.c.—Scottish warrants, 54s.; Scotch, g.m.b., No. 1, 55s. 6d.; No. 2, 52s. net.—Copper: Chili bars, 69s.; B.S. ingot, 70s.; tough cast, 77s.—Lead: Best English soft pig, 20s. 10s.; German soft pig, 21s. c.i.f.; Liverpool or London—Spelter: Silesian, 20s. 10s.; English, 20s. 6s. 6d. no rails, makers' warrants—Tin:

Straits, 68s.; Australian, 69s.; British, 75s.—Tin-Plates: Best charcoal, 26s.; charcoal, 28s.; best coke, 28s.; coke, 22s.—Tubes and Fittings: 75 to 77½ per cent.

Meetings of Public Companies.

THE YORKE PENINSULA MINING COMPANY.

The annual meeting of shareholders was held, yesterday, at the Cannon-street Hotel, Mr. F. P. WARD, the Chairman of the company, presiding.

Mr. C. GRAINGER (the secretary) read the notice convening the meeting.

The CHAIRMAN, in moving the adoption of the report, observed that the report which had been put into the hands of the shareholders was one which afforded much reason for congratulation. It recorded an amount of progress in the development of the Kurilla Mine which was very satisfactory, and exceeded the anticipations expressed by the board when they last met the shareholders. Although the price of copper had been very much against the mine, yet it had been able to pay its way and leave a profit on the working of the year 1876. So far as this year had gone, the rate of productiveness of the mine had increased, as the first three months of this year had given a profit about equal to the whole of that of the previous year. He might fairly say, therefore, that the affairs of the company had assumed a new and promising phase, and if the mine continued to develop and yield ore well he hoped before long to be able to speak to them about dividend. The value of the ore raised from April, 1875, to April, 1876, was about 5000*l.*, while that raised in the same period of the following year was about 13,000*l.* The Duryea property, adjoining the Kurilla, was a property of considerable promise, and one that they had long desired to work, but the paramount claims of the Kurilla to the moderate funds at command had hitherto prevented their carrying out this very desirable object. As they did not see their way at present to do this, and as there were important reasons why further delay in getting it worked should, if possible, be avoided, they had taken advantage of a favourable opportunity to dispose of it to a proposed new company, about which he would presently speak further, at the price of 5000*l.*, to be paid 3000*l.* in cash and 2000*l.* in shares, and a royalty of 1-25th of the ore to be raised. That price they considered a fair one. He would call their attention also to their important Bon Accord property, which, although not being worked, was every day assuming more importance and promise in consequence of the light that was being thrown upon it by the workings of the adjoining Burra Burra Mine. Moreover, the property was freehold, had an area, including adjoining land, of about 630 acres, and was of considerable value for the surface only. Of the Aberdeen townships upon it a considerable quantity had been sold. Prices of allotments had risen since the company first began to sell, and they expected to realise for the remainder of the townships already laid out between 40*l.* and 500*l.* at present rates; but there could be little doubt that the prices would continue to rise as they had already done. The railway passed right through the township, and population was increasing. He now approached a matter of considerable importance, and that was what should be done as to the accrued dividend on the company's preference shares? Up to the 30th of this month they would amount to about 14,800*l.*, and the directors were anxious to take some satisfactory course for dealing with the arrears. On the whole, after full discussion, they had arrived at the conclusion that these arrears had better be capitalised; and, as the report had already informed them, they proposed to create a sufficient further amount of preference shares, identical with the other as regards rate of dividend and privileges. From the proxies the board had received it was apparent that the plan was very favourably received—(hear, hear)—and he fully expected that it would be unanimously carried at the special meeting which would immediately follow the present one. He would now recur to the subject of the sale of the Duryea property, and state that the purchasing company was the Ravenscliff Mining Company. A very careful examination of the arrangements made by that company had satisfied him and his colleagues that it had in itself a very good foundation to rest upon. It had acquired a most promising gold property in New Zealand, which he believed would almost from the outset give a good return upon the outlay needed for its development. The parties connected with the property in New Zealand were gentlemen of whom he had a high opinion for straightforward business capacity, and he was confident that the statements that had been placed before them were not only true, but that the reports with which the company were worthy of his perfect confidence. But, in addition to the very attractive consideration that this gold property in the colony of New Zealand was likely to become a paying one in a comparatively short time, there was the further important one that would weigh heavily with them—namely, that by establishing the Ravenscliff Company, and making over to it this company's Duryea property, they effected the twofold object of getting the Duryea property worked and putting into the hands of the board 5000*l.*, which would be of immense benefit in enabling them to connect themselves with the company on an early date. He might have said a third object, for he believed the new company would afford them a very desirable opportunity for investing money in a well conceived and honestly projected mining undertaking. The company was formed upon the wholesome principle of having two strings to its bow, in the shape of properties in Australia and New Zealand, and if it should be said that those parts of the world were distant from one another, he would observe that that offered no practical difficulty, as they would both be directed by the one board, and the same man would be in charge of the two enterprises, and it could be no more difficult to deal with these two properties by one company than it is for one company to carry on operations on two properties in different parts in any one of the large colonies, as he knew by practical experience was the case with the highly successful Scottish Australian Mining Company, of which he was a director, and the same might be said of other Australian companies, as well as of numberless mercantile firms.

Mr. MORRISON understood from the accounts that the Kurilla Mine during the past 15 months had not only met all the costs, but left a profit. He approved of the plan for creating more preference shares, and would not have objected to a further increase of capital, but that he saw would be provided by the funds to be obtained from the sale of the Duryea property to the Ravenscliff Company. Mr. BROMFIELD said that he represented for himself and friends, whose proxies he held, upwards of 10,000 shares in the company, and had taken great pains to make himself thoroughly acquainted with the company's affairs, and in doing so had had many long interviews with the board and secretary, and he must say that he had been most ready to listen to and adopt his suggestions whenever they approved themselves to his judgment as in the interests of the company. He never knew a board more ready to afford the very fullest information. He had thus convinced himself that the plan for capitalising the arrears of preference dividend was one that he ought to support, and urge upon others to support also. In like manner he had come to the conclusion that the sale of the Duryea property to the Ravenscliff Company was an excellent transaction for all parties. He had taken some shares in the new company himself, and thought that other shareholders would do well to do the same.

The CHAIRMAN then put the resolution for the adoption of the report, and the same was carried unanimously.

Mr. RAIT said that, as a shareholder who had from time to time taken a prominent part in the various measures for carrying on the company's operations, he wished now to bring prominently before the shareholders the claims of the Ravenscliff Company to their consideration. Owing to the breaking out of the war between Russia and Turkey just at the time when the prospectus was issued, many shareholders, no doubt, had had their attention diverted from it. He happened to know something of the gold property in New Zealand, and of those by whom it was introduced to the London public. He thought there were few properties that promised better, and the vendors showed their confidence in it by taking shares in the company for far the larger part of the purchase-money, their object being, as they stated, to get their remuneration out of the mine, as they believed that in the end they would get more in that way than in taking the whole in cash. He had every confidence that the Ravenscliff Company would be successful, and that its establishment would greatly benefit this company, there was not the shadow of a doubt, and for these reasons he had subscribed for shares in it. He moved "That this meeting, believing that the proposed Ravenscliff Mining Company has not only very substantial merits of its own to recommend it, but that its establishment is calculated to be a benefit to this company, resolve to promote that object, and strongly urge their absent fellow-shareholders to co-operate with them in attaining it."

Mr. BROMFIELD seconded the resolution, and the same was carried unanimously. A special meeting of the holders of preference shares was then held, at which a resolution approving of the proposed issue of further preference shares was moved, seconded, and carried unanimously.

After that a special general meeting of both ordinary and preference shareholders was held, at which a resolution creating and authorising the issue of 14,800 preference shares of 1*l.* sterling each, on the same terms as the existing preference shares, was moved, seconded, and carried unanimously.

A vote of thanks to the Chairman, directors, and officers of the company, in which he expressed his satisfaction with and appreciation of the services of Capt. Anthony, was moved by Mr. MORRISON, seconded, and carried unanimously, and the meeting separated.

WEST MARIA AND FORTESCUE.—At a meeting of the shareholders, held at the mine on Thursday (Mr. J. E. Watson, of Glasgow, in the chair), it was resolved that the company should be wound-up, and a call of 6s. per share was made to pay off the liabilities. At the close of the proceedings Capt. Skewis proposed a vote of thanks to Mr. J. E. Watson, speaking in eulogistic terms of the admirable manner in which that gentleman had discharged all the duties connected with the purser'ship of the mine. This was seconded and carried unanimously.

[For remainder of Meetings see to-day's Supplement.]

THE MANUFACTURE OF PORTLAND CEMENT.—Instead of washing the chalk and the clay of which Portland cement is composed by wash mills in the ordinary way, Mr. R. A. GIBBONS, of Northfleet, proposes to take the chalk and clay in the state in which they are dug from the pit, and without adding water he passes them together through a series of incorporating rollers of any suitable known construction, whereby the two substances are so thoroughly ground and incorporated that the resulting compound in the form of a stiff paste or pug can be taken direct to the drying floors, where it is rapidly dried, and then burnt in the kilns in the usual way. If desired the paste or pug can be moulded into bricks or other required shapes before drying. The saving of labour by this im-

proved process of manufacture is said to be very great as compared to the processes now in use.

ECHOES FROM THE MINING MARKET.

Business has been fairly active in the Mining Market during the week, and again the shares of lead properties have absorbed the chief attention. Tankerville, Roman Gravel, Leadhills, Van, North, Laxey, Rookhope, Glenroy, Van Consols, Glyn, West Tankerville, and some others have been largely dealt in, and with the exception of Glyn and Van Consols, where adverse changes have been due to exceptional causes, prices have been not only steady, but in some cases have advanced.

The decline in Van Consols and Glyn shares has made further progress this week owing to some unpleasant rumours affecting the management. At the present stage of affairs little beyond this can be fairly mentioned, but at the same time it is due to the public to state that the resources of both mines are said to be ample to be at a low ebb, and that operations in both have been within the last few days considerably curtailed.

In other departments of the market foreign shares and colliery undertakings have been moderately supported, but there is little actual change calling for special notice. Exchequer remain firm at last week's quotation of 6s. 3d. to 8s. 4d. Some good advice have been received from Port Phillip. Profit for the month, 2087*l.*; remittance, 1900*l.* Richmond are 6½ to 6¾. Eberhardt, 6½ to 7. Last Chance, 10s. to 15s. Flaxstaff, 2½ to 2¾. Javalat, 6s. to 8s.

Of copper mines Fanny Mountain have advanced to 10s. 12s. 6d., whilst Devon Consols has re-entered the Dividend List, with a dividend of 5s. per share. The fortnightly settlement has been rather a heavy one for lead shares—a circumstance we are glad to notice, for it shows how steadily the public continue to invest in these securities. Now that tin shares are so generally neglected we may expect a still greater accession of public confidence in those lead undertakings which can bear the test of rigid enquiry, and, therefore, a gradual enhancement of prices may be looked for.

The disclosures made within the past few days of the financial position of some Cornish tin mines has, we are glad to say, attracted wide-spread attention. The unfortunate state of affairs at West Basset, to which we had intended to have referred at greater length this week, but which pressure on our time, owing to the intervention of the settlement, has obliged us to defer until next week, has caused great indignation amongst some of the adventurers, and the announcement of an indebtedness to the bankers of 25,000*l.* has been received in some quarters with actual incredulity. But the facts remain that the committee have, without the general consent of their co-adventurers, overdrew the bank account to this large amount, and that the purser, when challenged at the meeting by a doubting shareholder to place the pass-book on the table, strove for a long time to keep the knowledge of the amount of the overdraft from public observation. Cornish tin mining, owing to the disastrous course of the tin market, is sufficiently discredited as it is. It can little afford to stand the chance of losing the last sparks of public confidence; but if such practices as have lately come to light are to be defended and excused the days of industry are assuredly numbered. Of course, we are aware that all Cornish mines are not offenders. There are exceptions, and good exceptions; but we are afraid the latter are in the minority.

We have received some satisfactory intelligence from North Buxy which is opening out a very good little mine. The mine being shallow is cheaply worked; the accounts are charged up close, and it is said that before long a dividend of 1*l.* per share will be paid. Other mines in which costs are closely charged up are South Condour, Wheel Grenville, and Wheel Eliza. We hope to add to this list.

JAMES H. CROFT.

ANNUAL RECORD OF SCIENCE AND INDUSTRY.

The large number of workers now engaged in every branch of science, and the variety of publications in which the result of their labours is recorded, renders it almost impossible for one to keep well posted with regard to the progress being made without the assistance of some such compilation as that of Mr. Baird, of the Smithsonian Institute. As to arrangement, the Annual corresponds with what the late Mr. John Timbs's Year-Books of Science were intended to be; but there is the important difference that whilst Mr. Timbs was possessed of too little general information himself to enable him to separate the wheat from the chaff, the author of the present work is not only well read himself, but by securing the co-operation of high authorities to deal with the several subjects to which each has given special attention has succeeded in getting a really useful epitome of the year's progress. The Annual, which is the sixth of the series, is intended to present an intelligible and popular account of the more important facts of progress in the various departments of the physical and natural sciences, and their application to the conveniences and luxuries of mankind. In addition to the summaries, there is an excellent series of abstracts, an obituary, and a useful list of the more important publications in science. There is an alphabetical list of authors and subjects, and a systematic table of contents, so that whatever particular matter the reader may be interested in it can be referred to with great facility, and if it do not contain sufficient detail for his purpose it will certainly direct him to the sources whence it can be had. The General Summaries, although brief, are crowded with information, so that the same amount of knowledge of what has been done during the year could scarcely be obtained otherwise, without constant and careful reading of a very large number of publications, whilst the names of the writers are an ample guarantee for accuracy. Each chapter is really a clever essay upon the science treated of; that on Astronomy being contributed by Prof. E. S. Holden, of the United States Navy; on Meteorology and Terrestrial Physics by Cleveland Abbe; on Physics, by Prof. G. F. Barker of the University of Pennsylvania; on Chemistry by the same; on Mineralogy by Dr. Edward S. Dana, of Yale College; on Geology by Dr. T. Sterry Hunt, F.R.S.; on Geography by Lieut. Gen. F. M. Green, of the United States Navy; on Hydrography by the same; on Anthropology by Otis T. Mason, of Columbian University, Washington; on General Zoology, by Dr. A. S. Packard, jun., and Prof. Theo. N. Gill; on Invertebrate Zoology, by Dr. Packard; on Vertebrate Zoology, by Prof. Gill; on Botany, by Prof. W. G. Farlow, M.D., of Harvard College; on Agriculture and Rural Economy, by Prof. W. O. Atwater; and on Industrial Statistics, by William H. Wahl. With such men as these forming the list of contributors it is needless to state that the work has been done in a manner that leaves nothing to be desired. The book has the additional advantage of being thoroughly well and carefully printed with very clear type and upon good quality paper, so that it is well worthy of a place in the library where, with the other volumes of the series, it will form one of the most useful works of reference extant.

* "Annual Record of Science and Industry for 1876." By SPENCER F. BAIRD, with the assistance of eminent men of science. New York: Harper and Brothers, London: Trubner and Co.

TREATING COPPER.—With a view to communicate great hardness, toughness, and homogeneity to copper and alloys of copper, so as better to fit them for certain industrial uses, Mr. W. E. EVERITT, of Birmingham, takes oxide of manganese, preferably the native ore commonly known as black oxide of manganese, in a state of fine powder, and in the proportion of from one to six parts by weight of the said oxide of manganese to 100 parts by weight of the copper to be operated upon. He puts the copper and oxide of manganese together into the melting pot or melting furnace, and when the copper is melted stirs the oxide of manganese well into it. As soon as the dross and scum have thoroughly separated from and risen to the surface of the melted metal, the copper or alloy is ready to be poured into ingot or other moulds. In treating brass he proceeds as described with respect to copper, adding the required percentage of zinc to the melted copper. The alloys of copper to which the invention is especially applicable are alloys of copper and zinc, but he does not limit himself thereto, as his invention is also applicable to other alloys, of which the essential metal is copper. Besides rendering copper and alloys of copper tougher, harder, and more homogeneous, the treatment described facilitates the rolling of alloys of copper at a red heat, and thereby effects an economy of time and labour in the rolling process. Copper and brass treated according to the invention are admirably fitted for the manufacture of steam-boiler tubes, bearing for shafts or axles, axle boxes, sheathing for ships, and bolts and nails for the same, as well as for sheet brass and brass wire. Although in practice he has found the native black oxide of manganese to answer well, yet he does not limit himself to the use of that particular compound of manganese, as other oxides of that metal, or compounds which on being heated yield oxide of manganese, may be employed with like results.

VALVELESS PUMP.—The pump invented by Mr. L. P. ORTON, of Victoria Chambers, consists of a flexible india-rubber tube inserted along the inside of a segment of a circular frame made of wood or metal. The frame carries an axis on which are fixed cross bars having at their ends rollers, and the working of the pump is produced by turning a handle which rotates the axis and cross bars. The rollers at their extremities come in succession against the tube so as to flatten it against the segment of the frame. The segment of the circular frame upon which the tube is, is a little longer than the distance between the rollers, so that the action of the next roller may be brought to bear upon the tube before the other has left or ceased acting. By means of the expulsion of the air from the tube suction is produced, and the forcing effect is produced by the following rollers acting upon the tube; the action is very powerful although a comparatively small force is required to work the machine. The pump has also the recommendation that it can be easily transported from place to place, and can be fixed ready to work without expense. There are no valves, and the pumps can be made of any size.

MALABAR.—G. B. O'Reilly, May 18: There appears to be some tendency for improvement in the character of the gravel, but it is impossible to say how far this may better our returns, until we clean up. The streak of pipeclay now running through the whole face some 70 ft. from the bed rock does not impede our washing to any great extent, forming as it does but an insignificant proportion of the ground; also from its position it breaks up into much smaller masses than formerly, and is thus far easier to pick up and run off. The boulders as well appear to be diminishing in number and size, and I think that we shall be very much more free from this impediment to our work. I could not sun up the present position of the gravel, but I think that the character of the gravel has improved, and there is no reason to think that it may not change as we penetrate further into the vast extent of new ground before us. To day we have in 450 hours run, and on completing 100 hours more we will clean up.

and on completing 12 fathoms more we clear up.

On July 28, 1902, the *U.S.S. Albatross* Roberts, June 28: District 1 Topps. The western part of the great quartz reef, the driving south in Zero level, continues to yield 5 cwt. of about 8 dwts. ore per fathom. A communication has been effected in the winze behind this end to the intermediate level, opening up well the ground between these two levels, and ventilating the end driving southward in Zero level. The lode in the end of Intermediate level south yields now 5 cwt. of ore per fathom. In the Intermediate end north we have an improvement, the lode yielding 3 tons of ore per fathom, worth, as per small mill trial, \$1.00 per ton. The great quartz reef, the driving south in Zero level. The end south at the 3 level in the mountain is being continued on a lode which is being divided into two parts. The end south of No. 2 level, on Marmo Rosso lode, is

not looking so well, ending at present about $\frac{1}{2}$ ton of ore per fathom, worth about 2 dwts. per ton.—New Lode: No change in the end south, on the so-called cauter branch in Zero level, neither in the end north on the new lode at No. 3 level.—Lode and Branches East of New Lode: The end of the Intermediate level No. 4 level, is about 1 ton of ore per fathom that would be worth 12 dwts. of gold per ton. A mill trial of the ore from this end will be made shortly. No change in the 4th cross cut east in No. 2 level. In the stopes in the bottom of the Intermediate level under Zero, and in back of No 1 level north, on the western lode, we have a slight falling off. All other stopes not mentioned above are about the same.—New Lode: The new level of the Intermediate is being made on the walls for new picking floors for No. 4 level.—District Prestera: The lode in the bottom of the new incline shaft is not looking so well as at the date of the last report, neither is the 90 end north. All other points not mentioned continue much the same. At surface good progress is being made in exca-

driving from the mill-house and water wheel to the Victoria Shaft: We have now taken the shaftmen from driving the 22 west to put in some timber and do some other work in this shaft before commencing to sink for another lift: I hope this preparatory work will be completed by this day week, when we shall begin to sink. At the 22 east we are not yet through the lode; so far as cut through it is fully 12 ft. wide, with blende and lead throughout. The 23 east is cut from the 22 west, and the shaftmen in the 23 east are cutting the lode. The 24 east is cut from the 23 east, and the shaftmen are also cutting north through the lode, where we are meeting with fine rocks of blende and lead: the lode here, as well as to the west of the shaft, appears to be very large, and to ascertain where the best part is for driving upon we must cut through the whole; the vugh we met with in this end a fortnight since appears to be largest in the bottom of the lode, and from this vugh the lode appears to be running south, but I am thinking the shaft is few feet, and if so it will be a great help to our sinking. Another good feature is—by the side of this vugh in the bottom we have a fine branch of blende and lead fully 18 in. wide, which I regard a good indication for our next level. There is no change in the 14 east of this shaft: we are never without lead in this end, but up to the present it is not enough to value. The 15 east is cut from the 14 east, and the shaftmen are now cutting the lode from the 15 east, and put them to drive the 22 west; but as there is good lead standing in the western end of this winze, I purpose taking on men as soon as I can get them to continue the sinking. We have not yet come upon anything of value in our trial shaft, east of the open-cast, but as we have no doubt that we are near the run of our lode here, we purpose driving a little north and south in order to meet

BRITTANY MINERALS (St. Brience, France).—John Edwards, June 23: The engine-shaft is now sunk 2 fms. 3 ft. below the 70'; the lode is fully $4\frac{1}{2}$ ft. wide, and worth from 50¢. to 60¢. per fm. for silver-lead ore for the length of shaft 12 ft., and the lode is much harder for progress, and letting out a quantity of water; the ground sunk during the past week is 2 ft. The lode in the 70 and driving south from engine-shaft, is 2 ft. wide, and worth for silver-lead ore from 15¢. to 20¢. per fathom; this level is now extended 4 fms. 3 ft. south from engine-shaft; ground driven during the past week is 2 ft. 6 in. We shall commence to stope the back of the 70' level as soon as we can come down, and shall then increase our returns on the 70' level. At the Botexieres we have sunk the engine-shaft during the past week 2 ft. 6 in.; the lode is just as reported last week, still carrying good stones of silver-lead ore. All the machinery is in good condition, and working well. Ore raised since last report 10 tons.

AUDITING MINE ACCOUNTS.—The auditors of Dolcoath Mine are Mr. Walter Pike, the purser of Cook's Kitchen, West Frances, and other mines; and Mr. James Tregown, confidential clerk to Sir F. M. Williams, Bart., M.P. The auditor of the accounts of Tincroft and Carn Brea is Mr. F. W. Dobb, also a confidential clerk under the Williams's Perran Foundry Company. The auditor of West Basset is Mr. John Hooking, jun., engineer, of Redruth. All these gentlemen have had great experience in mining matters, and are perfectly competent to audit any mine accounts placed before them.

MACHINERY OR CORNISH MINES.—At Gunnislake (Clitters) meeting, on Tuesday, the subject of jiggling machines was brought before the shareholders, and the agents, who had inspected jiggling machines, considered a saving of one-half could be effected by their use in dressing their copper ores; the kind of machinery and the extension of the dressing-floors is left in the hands of the agents. On the same day a paper on jiggling machines was read by Mr. J. G. Foster at Camborne, and he proposed the use of these machines will extend to Cornwall, and it is likely they will be adapted to tin-dressing, and be used for this purpose. The boring machine at Carn Brea is surpassing the wildest anticipations of Cornish miners so far as speed is concerned; the end at Carn Brea is 8 ft. wide and 7 ft. high, and is being driven by the machine at the rate of 3 ft. in 24 hours. When it was asserted that the machine at Dolcoath would drive three times as fast as hand labour scarcely anyone believed it, until the machine, twirlingstanding at a moment's notice, was put in motion, and the fact was proved. At present, however, the machine at Carn Brea will drive as much faster than the Dolcoath machine as that machine will drive faster than paces of men. We do not hesitate to say that these machines will revolutionise the working of Cornish mines. Shafting under the new regime will be sunk and ends driven in as many months as formerly used to be years, drawing machinery will have to be improved to keep pace with the breaking, otherwise it will become a matter of impossibility to bring the stuff to the surface, and the progress of the industry will be retarded. It is not yet known how long we shall live, but we hope, under improved conditions, and by the aid of more machinery, last as long as time itself will last.—*West Briton*.

The prospectus of Hughes Locomotive and Tramway Engine Works (Limited) has been issued. The company has been formed with a capital of 100,000*l.* in 10*l.* shares to acquire and work upon an extended scale the business of locomotive engine builders, carried on, for the last 20 years, by the firm of Henry Hughes and Co., at the Falcun Railway Plant Works, Loughborough, near Leicester, together with the freehold lands, works, plant, stock, goodwill, and patents. The total purchase money will be 71,35*l.* of which 9,000*l.* (the price of the freehold property and less than three-fourths of the valuation of the plant, stock-in-trade, and effects) is to be paid in cash, and 62,35*l.* in shares of which 3*l.* Hughes engaged to take 25,000 shares, one-quarter of the entire capital of the company, for a period of not less than three years.

COPPER ORES.

Sampled June 6, and sold at the Royal Hotel, Truro, June 21.							
Mines.		Tons.	Price.		Mines.		
Devon Great Consols.	100	.....	£5	0 0	Marke Valley	71	..... £4
ditto	93	.....	1	16 6	ditto	66	..... 2 12
ditto	91	.....	2	9 0	ditto	33	..... 7 5
ditto	80	.....	2	5 6	ditto	32	..... 2 10
ditto	79	.....	2	3 6	Glasgow Caradon	77	..... 4 10
ditto	75	.....	2	0 0	ditto	63	..... 4 2
ditto	73	.....	2	15 6	ditto	59	..... 2 11
ditto	71	.....	5	9 0	ditto	59	..... 2 11
ditto	67	.....	1	19 0	Gawton	59	..... 1 14
ditto	65	.....	6	11 0	ditto	55	..... 2 10
ditto	64	.....	3	16 6	ditto	48	..... 2 11
ditto	45	.....	2	6 6	ditto	29	..... 1 10
South Caradon	84	.....	2	15 0	Hington Down	51	..... 4 16
ditto	80	.....	4	15 6	ditto	51	..... 4 16
ditto	75	.....	5	13 0	ditto	24	..... 3 3
ditto	62	.....	4	13 0	Phoenix	100	..... 4 19
ditto	54	.....	11	2 6	ditto	40	..... 3 6
ditto	53	.....	6	19 0	East Caradon	57	..... 4 9
ditto	46	.....	6	19 0	ditto	57	..... 4 9
Marke Valley	87	.....	3	2 0	Wheel Courtenay	54	..... 4 3
ditto	81	.....	3	8 0	ditto	6	..... 11 8

TOTAL PRODUCE.							
Devon Great Con.	906	.....	£3263 18	0	Hingsdon Down ... 152	.....	£ 455 2
South Caradon ...	470	.....	30 8	2	Phoenix	140	828 0
Marke Valley	380	.....	1365	6	East Caradon	100	453 19
Glouce Caradon.	250	.....	1043	4 6	Wheal Courtenay.	60	293 2

Glasgow	102	409 12 0	Average standard	£103 11 0	Average produce	6
Gawton	102	409 12 0	Average price per ton	£4 3 0	Quantity of ore	2650
Quantity of ore	2650		Quantity of fine copper 17½ tons 4 cwt			

Amount of money £10,960 6 0
LAST SALE.—Average standard £ 99 8 0 | Average produce 7
 Standard of corresponding sale last month, £ 99 15 0—Produce, 7½

COMPANIES BY WHOM THE ORES WERE PURCHASED.

Names.	Tons.	Amount.
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Vivian and Sons.....	585 5 6	£2765	12	9
Grenfell and Sons.....	451 1 6	2736	12	6
Nevill, Druce, and Co.....	419 1 6	1414	6	1
Williams, Foster, and Co.....	477 5 6	1628	15	8
Mason and Elkington.....	221 5 6	5	6	12

Charles J. Lambert	237	912 9 9
Sweetland, Tuttle, and Co.....	277½	945 16 9
Total	2650	£10,960 6 0

NO SALE on Thursday next, June 28.

Copper ores for sale at Tabb's Hotel Redruth, on Thursday week—Mines and parcels.—West Tolgus 408—Mellaneur 373—West Seton 266—East Pool 200—Sou Crofty 177—South Carn Brea 56—Killifreth 56—West Roskar 41—Carn Brea 40—Wheal Common 29—West Godolphin 26—North Treskerby 25—Ruel's Ore 9—Ty leab Wood 4—South Tolgarna 4.—Total. 1713 tons.

Figure 11.000.0—South Atlantic of 1899, 1900, 1901.

worth 10% per fathom. The
per fathom. The last

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The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, JUNE 29, 1877.

IRON.	£ s. d.	£ s. d.
Pig, 40 lb., Clyde, 3 14 0 2 14 1 1/2		
Scottish, all No. 1, 2 15 0 3 5 0		
Wales, 40 lb., 2 10 0 3 12 6		
" In London, 6 0 0 6 5 0		
" Stafford, 7 10 0 8 15 0		
" In Tyne or Tees, 6 0 0 6 5 0		
Swedish, London, 9 15 0 10 0 0		
Rails, Welsh, at works, 5 0 0 5 5 0		
Railway chairs, 10 0 0 10 0 0		
Sheets, Staff., in London 9 0 0 —		
Plates, ship, in London 7 5 0 7 10 0		
Hoops, Staff., 7 15 0 8 10 0		
Mail rails, Staff., in Lon. 7 5 0 7 1 6		
STEEL.		
" with spring, 14 0 0 23 0 0		
" cast, 15 0 0 15 0 0		
" with, 16 0 0 16 0 0		
" fag. ham., 17 0 0 17 0 0		
LEAD.		
English, pig, common, 20 5 0 20 10 0		
" L.B. nom. 20 10 0 20 15 0		
" W.B. 21 0 0 —		
" sheet and bar, 21 7 6 21 10 0		
" pipe, 22 0 0 —		
" red, 22 5 0 22 10 0		
" white, 22 5 0 22 10 0		
" patent shot, 24 10 0 —		
Spanish, 20 15 0 20 20 0		
QUICKSILVER.		
Flasks of 75 lbs., ware, 7 5 0 —		
SPELTER.		
Slit-on or Rheinish, 19 15 0 —		
English, Swansea, 22 10 0 —		
Sh et zinc, 24 0 0 24 10 0		

At the works, 1s. to 1s. 6d. per box less for ordinary; 10s. per ton less for Canada; 1X 9s. per box more than 10 quoted above, and add 6s. for each X. Terms—plates 2s. per box below tin-plates of similar brands.

REMARKS.—Nothing of particular interest has occurred to affect the present condition of our markets, and, as the holiday season has commenced, business for the next few weeks will probably remain quiet; nevertheless, some amendment may very shortly alter that time take place, for the following reasons:—First, on account of the increased demand that usually arises in the autumn; secondly, on account of the cheapness of money; and thirdly, on account of the prospects of a good harvest. In respect to the autumn demand, that will be very soon coming on, and perhaps, as others have been so extremely limited for a long time past, they may be more than ordinary this latter part of the year, so as to make up in some measure for previous deficiencies; at any rate, there is decidedly room for great improvement, and prices being moderate will offer an additional inducement for many buyers to come forward. As regards the present low rates of money, they afford every facility for financing easily and cheaply, and their importance at such a juncture cannot be overrated, as they not only impart confidence to holders, and help them in sustaining prices, but if unaltered will be most essential whenever speculation sets in. With reference to the harvest, everything is most promising and satisfactory, and the prospects, to say the least, are exceedingly cheerful, and as a good harvest is the foundation of prosperity, and the greatest source of happiness and contentment to the people, the general state of the country must be benefited thereby, and the home trade considerably improved. Now, if there should be anything transpire of a favourable character in addition to what we have already alluded to, such, for instance, as the Turkish war being brought nearer to a close, a great impetus would also be given to the shipping trade, as well as to speculation, for everybody is anxious and eager to be doing something. Speculators are already on the alert, and only waiting for the first reliable sign to begin operations on an extensive scale, therefore, as soon as any evidence of an approaching settlement of the war can be discerned, a general movement will ensue, and buyers must be prepared to act immediately it comes, otherwise they will miss their opportunity. Some, in fact, are beginning to make preliminary arrangements in anticipation that ere long there will be some interference on the part of the Great Powers to stop the war, and as they fully expect that when that time arrives the reaction will be sharp and sudden, they think it more advisable to get snugly in before rather than run the risk of losing their chance, and being shut out in the end.

COPPER.—The market for all descriptions has been extremely quiet, and prices have only undergone trifling variations, but keep fairly steady. Australian is firm, especially Wallowa, which can only be bought in limited quantities at comparatively high prices. For manufactured and yellow metal there is very little doing, the limit being too low for smelters to entertain, but according to the present Indian Exchange there is not much probability of their being increased, and the only inducement for buyers to give out orders would be to lower the price. This sellers would willingly do, provided importers of Chili bars and regulus were more accommodating in their prices. There have been large shipments of copper and yellow metal forwarded to India, and unless merchants can now buy at a reduction upon former rates they are not disposed to go on shipping to any extent, as their markets are well supplied, and there is scarcely any business done during the monsoon. With regard to Chili bars their value at present is unaltered, notwithstanding the estimated deliveries are good, but, as we have before stated, at any moment a great depreciation might take place, and it is not safe to buy more than is wanted for immediate requirements. Holders, therefore, should not be too exacting, but accept reasonable rates, and not keep forever piling up stocks, to the injury of the whole trade. Such artificial means of holding up prices do not tend to its improvement; and however determined holders may be to go on holding, buyers will show that they can be equally firm and resolute in holding back.

IRON.—The iron trade remains quiet, and there is scarcely any change to note in the prices or demand for manufactured, but in Scotch pigs there has been more doing, and prices have slightly rallied. It is reported that there is a good deal of agitation in the mining districts of Scotland, and some disposition is shown to curtail the production.

SHIPMENTS.	Tons	1877
Week ending June 23, 1877	13,342	
Week ending June 24, 1876	5,071	
Increase	5,271	
Total decrease for 1877	1,256	
Imports of Middlesborough pig-iron into Grangemouth:		
Week ending June 23, 1877	6,440	
Week ending June 24, 1876	3,360	
Increase	3,280	
Total increase for 1877	32,899	

The following statement shows the shipments of the last five years from January to June 23—

1877	1876	1875	1874	1873
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By the above figures it will be seen that this year's total shipments are slightly in excess of those of last year, and it is hoped that the comparison will be still more favourable as the season advances; the prices of pigs is moderate, and, therefore, no hindrance to general foundry work, but they are still too high to enable sellers to convert into bars, and sell at a price to compete with Belgium. The American market is reported weak for Scotch pigs, Ellington brand is quoted 8 5/8, Glenaroch 8 7/8, and Coltness 8 5/8. American pig is depressed; No. 1 has been sold at \$19, and the price is now quoted \$18 1/2; No. 2, \$17 1/2. Rails cut at \$3 1/2 to \$3 7/8, and steel \$4 5/8 to \$5. Scrap is unchanged, and manufactured steady. The production of pig iron in the United States has been steadily declining since 1874, in which year the return made up in net tons of 2,000 lbs. consisted of 2,559,413. In 1875, 2,285,581; and in 1876, 2,199,326. Rails of all kinds have increased, particularly steel rails. The iron trade is very unsettled in Birmingham; manufacturers, however, decline to quote for distant delivery, but the quotations are said to be as variable as the number of makers. In Newcastle the iron market shows no sign of improvement, and, low as the prices are, yet orders continue to be carried off for girders by the Belgian houses. No previous war, it is stated, has had such a prejudicial effect upon shipping as the present one; but we doubt whether the slackness of trade can be attributed altogether to the war, but it has, no doubt, had a great deal to do with it; but the iron trade suffers quite as much from other causes, and the principal cause is to be traced to the prolongation of high prices and the curtailment of the labour; they have brought more mischief upon our market than anything else, for we have now competitors who are able to undersell us by 10s. per ton in bars, and unless strenuous efforts are made to defeat them our shipping trade will in future be greatly divided, and a large proportion, and, we fear, an increasing one, will be lost to the country for ever.

From Sheffield we hear that the iron trade there remains extremely quiet, and although prices are easy, and unusually favourable terms are offered to buyers, they hesitate to do business, and the steel trade is so keenly competed for that further reductions are announced. The Yorkshire district has seldom been in a worse condition than at the present time, hopes of revival have not been realised, and it is said that no encouragement exists for the future. Pig iron cannot be worked off even at diminished prices, and some of the forges are so slack that it has been found necessary to further reduce production and discharge their workmen. The Rotherham districts show no change, and at all the works dulness still prevails. In Lancashire pig iron is unaltered, trade is reported very bad, and without signs of any real improvement this year. The Leeds district is also said to be very quiet, and the number of orders given out are few and unimportant. The total

number of furnaces in the county is 21, and 11 only are in blast. South Durham is also dull, and prices remain unchanged. The bar mills are but indifferently employed, but a good demand exists for plates. From Barrow-in-Furness no movement is reported, but the market is steady, and as makers have secured a few orders they take a more hopeful view of the future, but there is not much appearance of increased activity.

LEAD.—The tendency of this metal has been towards easier rates both in English and Spanish, the latter without silver is reported 18 1/2s. at 19s.

SPELTER.—There has been no improvement in the demand, and prices are a shade lower for some kinds.

QUICKSILVER.—This metal has slightly fluctuated in value, business having been done during the week at 77 5s., and also at 77 2s. 6d. for Spanish. The advices by the mail leaving New York on the 16th instant state that the demand there is only moderate, and prices are unchanged—45 cents to 47 cents gold. The supplies from San Francisco are increasing, and they may exercise some influence upon future prices. It is stated that the production during last month was over 8200 flasks, being the largest monthly out-turn on record. The total exports show a large increase over those of 1876, and three hundred bottles are reported to have been sold by an operator as low as 40 1/2 cents, but the market rallied after that owing to fresh orders being received for China, and the price advanced to 42 cents, and closing strong at that rate. The following is an extract from The San José Mercury: "For some time past we have heard rumours that valuable and extensive developments of metal have been made on the lower levels of the Guadalupe Mine. We do not usually give credence to reports of this character, but in this case from careful enquiry we understand these to be well founded, and they acquire some significance from the fact that three members of the great bonanza firm of San Francisco have recently made several visits to the Guadalupe, and since then the product of that mine has been regularly shipped. We have it from reliable authority that the product of the Guadalupe Mine is to be increased to at least 20000 flasks a month, or as much more as the market will take.

TIN-PLATES.—The market is still dull, and prices easy. **TIN.**—Sellers have been enabled to realise about 10s. per ton over last week's prices, but the market has shown a little indecision at times, and quotations have been rather wide. The deliveries are spoken of as likely to be large this month, and this may help sellers to obtain higher rates, especially as the arrivals up to date have been moderate, and much below the deliveries. We may here mention that the estimated arrivals for the first three weeks of this month, given in our last week's report as 1-10th that of the deliveries, should have been stated as equal to about half the deliveries. Statistics, therefore, at the close of the month may be expected to show some improvement upon the last return, and should they continue to go on favourably the market will, no doubt, gain strength; but sellers must not expect too much. Slight variations will have no material weight, whereas a large rise would stop business altogether. A little movement, such as has been experienced during the past fortnight, keeps the market from sinking into a lifeless condition, and causes more interest to be taken in it than would otherwise be the case. No one would have any confidence in buying a very large quantity, or holding for a very large profit, until such a time as the future supplies from Australia can be correctly formed, and it is now an established fact that immense deposits are in both countries, and that it can be produced at a profit at present prices, but how far these profits will content sellers is another question. The commerce of the world could not be carried on without making profits, and it is absurd to think because there are profits upon importations that it is a convincing reason for a greater fall in price.

THE IRON TRADE.—(Griffiths's Weekly Report).—Friday Evening. The price of G.M.B. warrants on the Glasgow Exchange this evening is 54s., a fall this week of 6d. per ton. We quote makers' No. 1 iron:—Gartsherrie, 62s. 6d.; Coltness, 66s. 6d.; Calder, 62s.; Langloan, 62s. 6d.; Summerlee, 60s.; Monkland, 55s. 6d. L.B. Glasgow:—Glenkiln, 58s. 6d.; Eglinton, 58s. 6d.; L.B. Glasgow:—Shotts, 60s. L.B. Leith:—Kennel, 58s. L.B. Bo'ness. We have but little change to notice in the iron trade this week. The hot weather is beginning to curtail the make, which will diminish the earnings of the forge and millmen. Orders are not more abundant than they were, and trade on our Exchange as a consequence flags in all departments. The unfavourable revelations recently made at the statutory meetings of numerous iron companies have confirmed the general impression that iron making is now carried on in most districts without profit, and frequently at a loss. We mentioned last week that a change would be made in Staffordshire bars on the 15th prox. at the Birmingham Quarter Day, which will be held in the Iron Exchange of that town. It is expected this meeting will be largely attended. There is nothing special to note on any of the Provincial Exchanges. Birmingham was quiet and cheerful, Middlesborough weak and undecided. Barrow maintains prices best of all; Glasgow leaves no important changes to register. The tin plate trade still suffers from great depression in the absence of increased demand. Australian tin has been sold this week as low as 67 1/2s. Spelter oscillates, and is weaker. No doubt lower prices will be registered in this metal very soon. When Australian tin registered 14 1/2s., we then ventured an opinion that before the end of August it would be sold at 64s. We think so still.

The settlement of the fortnightly account has occupied the chief attention of the dealers in the MINING SHARE MARKET this week, and business has been rather dull and limited, with prices, for the most part, merely nominal. The mines dealt in have included Roman Gravel, Van, East Van, North Laxey, Rookhope, Derwent, Parys Mountain, Leadhills, Glenroy, Great Laxey, West Tankerville, Tankerville, and a few others. **TIN MINES** remain without change—the tin standard is down 10s. per ton. Dolcoath, 23 to 30; there is some talk of a dividend of 5s. here on Monday. Tincroft, 14 to 15; Carn Brea, 30 to 32; Cook's Kitchen, 1 to 1 1/2. Wheel Jane, 1 1/2 to 1 3/4; at the meeting the accounts showed a profit of 133s. on four months' working. The tin ore sold (50 tons) realised 220s. The costs are charged up to March only. The statement of assets and liabilities shows of the latter (of which 6260s. is due to bankers) 8550s.; the assets are—ores in stock, 7267s.; ores sold and not paid for, 615s.; leaving a balance against the company of 645s. South Condurrow, 7 1/2 to 7 3/4; West Godolphin, 2 to 3; Wheel Kitty (St. Agnes), 1 1/2 to 2; Wheel Uny, 20s. to 25s.; Wheel Grenville, 30s. to 35s.; the north shaft is 3 fms. below the 140, and the ground easy. The 140 west is worth 9s. per fathom. At western shaft the 160 east is worth 7s. per fms.; west, 8s. per fathom. Wheel Agar, 3 to 3 1/2; the 10s. still continues rich at the shaft. At Treigh Wood Mine meeting a call of 5s. per share was made.

In **COPPER MINES**, Devon Great Consols are quoted at 4 1/2 to 4 3/4; the directors have this week declared a dividend of 5s. per share (2550s.). Prior to 1872 the mine had paid dividends exceeding 1,000,000s. sterling. Wheel Crebor, 1 1/2 to 2; the lode in the 120 east is worth 20s. per fathom. The stope in the back 107. The 48 east for the part carried is worth 10s. per fathom. West Tolgus, 60 to 62; at the meeting, on Monday, a dividend of 1s. per share (512s.) was declared, and a balance carried forward of 332s. The copper ores sold and credited were 592 tons, equal to 3653s.; profit on two months, 543s. The ore sold for the next two months, but not credited in the ore account, realised 4077s. The report of the mine was considered very satisfactory, and every well-wisher of mining must echo the sentiments of the Chairman—that were all mining accounts kept like those of West Tolgus there would be greater confidence felt in Cornish mines. Hingston Down, 2s. 6d. to 5s.; Marke Valley, 1 to 1 1/2; Penstruthel, 4s. to 6s.; West Seton, 28 to 30. At Gannilake (Clitters) meeting the accounts showed a profit on the four months' working of 1817 2s. 6d., a credit balance of 1040s. 16s. 1d. The copper ores sold for 3312s. 8s. 8d. Parys Mountain has been quiet during the month at 9s. to 11s., but on Friday afternoon became more in request, and left off 10s. to 12s. No change at the mine.

Among **LEAD MINE** shares Van are quoted 34 to 36; the directors have this week declared a dividend of 16s. per share, or 12,000s. for the quarter. Roman Gravel, 10 to 10 1/2; the 106 north is worth 1 ton per fathom. The 106 south is worth 1 ton per fathom. The 80 south has improved to 2 tons. Ladywell, 12s. 6d. to 17s. 6d.; the sampling here is 20 tons of lead. Tankerville, 7 1/2 to 7 3/4. West Tankerville, 20s. to 22s. 6d.; the lead ore (35 tons) realised 439s. 5s. Great Laxey, 20 to 21; the cross-cut at the 70 south is in 3 fms. In the 60 the lode is still worth 2 tons of lead per fathom. Derwent, 2 1/2 to 3 1/2; this mine looks well. The sides of the 93 at Jeffries' shaft are worth 3 tons of lead ore per cubic fathom. The No. 1 stope is worth 3 tons per cubic fathom, or 4 tons for the width of the lode. No. 2 stope is worth 1 1/2 ton per cubic fathom, and 2 1/2 tons for the whole width. Other points continue productive. The return for the month is 29 tons of pig-lead, which we understand nearly pays cost, but in a short time the quantity will be increased, particularly when the Sun vein is opened upon in about two months.

Glenroy, 20s. to 25s.; the lode is still large in the shaft. Some of the stopes have improved. East Van, 5 to 5 1/2; the agent has to be down to the 40 by about the end of the month. The 25 has still spots of lead. Glyn, 7s. 6d. to 12s. 6d.; Leadhills, 6 to 6 1/2; Pateley Bridge, 2 to 2 1/2; Pennerley, 2s. 6d. to 5s.; Rookhope (Lead), 20s. to 22s. 6d.; Van Consols, 10s. to 15s.; West Chiverton, 14 to 16; West Craven Moor, 11 to 13. Combarn, 7s. 6d. to 10s.; the lode

at the 37 is worth 1/2 ton of silver-lead and 5 cwt. of blende per fm. At Old Treburgett we understand that Masey's shaft, in the very heart of the ore ground, is down 50 fms., and worth 12s. per fathom. The mine is working to a profit, but capital is required to meet the dishonoured bill of the Bury Port Smelting Company, and if the debentures are not all taken up at the meeting, and the company should be wound-up, a project, we hear, will be mooted to form a new company, and give the present holders fully paid-up shares in it for the interest they now hold, and raise capital by the sale of other shares on favourable terms. Grogwinon, 3 1/2 to 4 1/2; Red Rock Valley, 3 1/2 to 4; West Wye Valley, 3 1/2 to 4; West Gogion 3 1/2 to 4; ditto Pref., 1 to 1 1/2.

In **FOREIGN MINES** Condes of Chili are quoted 2 1/2 to 3 1/2; Argentine, 4 to 5; Eberhardt and Aurora, 6 1/2 to 7 1/2; Exchequer, 5s. to 7s. 6d.; Flagstaff, 2 1/2 to 3 1/2; Frontino, 2 1/2 to 3 1/2; Javal, 8s. to 10s.; New Zealand Kapanga, 2 to 3; Last Chance, 10s. to 15s.; Quebrada, 1 1/2 to 2 1/2; Richmond, 6 1/2 to 8 1/2; St. John del Rey, 280 to 300; Huatafall, 5 1/2 to 6.

The Market for Mine Shares on the Stock Exchange during the week has been without much animation, the course of general business having been interfered with by the adjustment of the fortnightly "account," which was completed yesterday (Friday). Probably the most encouraging feature in the mining market is the return of the Devon Great Consols to the list of dividend-paying mines; at the directors' meeting, on Wednesday, a dividend of 5s. per share was declared, payable on and after July 7. The notices will be sent to members in the course of next week.

Port Philip and Colonial, 3 to 4; the telegram from Melbourne states that the profit for the month ending June 20 was 2057s., and that 1600s. had been remitted.

St. John del Rey, 260 to 280; the latest telegram, dated Rio, June 24, gives the yield at 7 7/8 oits. per ton, and the profit for May at 7200s., the cost being 1000s. above the average. At the meeting, on Wednesday, it was stated that the first result of the commission of enquiry sent out to Morro Velho is the removal of the superintendent, who in times past has done good service for the company. Mr. Pearson Morrison has been appointed superintendent provisionally in his stead. A shareholder suggested that it was imperatively necessary for the company to be placed in such a position that its interests were not likely to be again imperilled by the malpractices of their manager in Morro Velho. The Chairman said the present manager was under a penalty of 1000s. for any maladministration of his office. The payment of a dividend of 17 1/2 per cent. on the capital stock of the company was formally sanctioned, in accordance with the announcement already made. Don Pedro, 3 to 4; the latest telegram, dated Rio, June 23, states the produce cleaned up for the first division of June to be 3050 oits. Santa Barbara, 1 1/2 to 2 1/2; the report states that, judging from the samples taken at the stamping mills, the mineral was a little better in quality. Frontino and Bolivia, 2 1/2 to 3; it is stated that heavy purchases on account of parties connected with South America, first announced a fortnight since, continue.

Richmond, 6 to 6 1/2; the manager's report states that the westerly discovery (the first body met with) had been opened out to the extent of 50 ft. in one direction by 15 ft. in another, the cross-drift of 50 ft. being in low-grade ore for the first 30 ft., and in very fair average quality for the remaining 20 ft. The westerly main drift started from the main shaft at the 500 ft. level had been run 240 ft., and at that distance ore was again struck, which appears to be part of the same ore body discovered in the rise at 150 ft. east of the point in question. The winze sunk below the 500 ft. level drift was down 60 ft., the bottom being in limestone with occasional stones of galena. The 600 and 400 westerly drifts were in a sufficiently forward state to allow the former by a rise and the latter by a winze of making connection with the westerly ore body now proved to the height of 130 ft. The effect of these works is to establish the fact of the existence of a large irregular body of ore in the westerly ground; when the ventilation is effected the probable extent at the spot reached will be more easily ascertained.

The explorations in this direction are reported to be very favourable, but the amount of ore actually developed cannot as yet be very large. It is stated that the trial is not only definitively fixed for July 23, but that, by arrangement between both parties, the case is to be tried on the merits—that is, that all the questions in dispute will be settled by the judgment given, so that the decision will be a final one, save that each party will have the right of appeal to the Supreme Courts at Washington. This fact will doubtless be a great relief to the Richmond shareholders, who will thus be spared the anxiety and costs of protracted proceedings in American local courts. It appears that the stock accounts to the end of the financial year have arrived, and are now in the hands of the accountants. The various stocks being nearly all worked up at the time the accounts in question were taken, there remained little to value except the bullion in its various stages—namely, in gold and silver bars, lead refined and in its crude state. By the time the balance-sheets reach the shareholders it is probable that much of the bullion estimated will be realised and stand as a cash asset; it will, at all events, have been nearly all forwarded to the bullion agent, so that the financial position can be determined to a nicety.

The report of the directors of the Eclipse Company is not encouraging. It has cost the company 5846s. 6s. 8d. to obtain 3367s. 7s. 3d. worth of gold. There are items—bills discounted 2525s., and sundry creditors 1297s. 1s. 9d. on the receipts side of the account; and sundry debtors, 2957s. 4s. 4d., and bank balance 1845s. 12s. 1d. on the other side. One of the directors has been to the mines, and upon becoming personally responsible for certain amounts Capt. Eudey transferred to the company the patent taken in his own name for the mill site, a large portion of the tramway, homestead, and other buildings; Capt. Eudey's resignation has since been accepted. Mr. Hulbert states that 700s. worth of gold per month has been obtained from 20 stamps; 1000s. worth could be got with 30 stamps, and he thinks that by reductions and strict supervision the whole expenses should not exceed 600s. per month, which would leave 4800s. per annum profit. He considers the directors' personal responsibility is amply covered by the value of the property. He does not think the debts (beyond Capt. Eudey's of 1100s., subject to set off) will exceed 1000s. in addition to the amount of the letter of credit drawn for. "Very unsatisfactory telegrams have for the last few days been received from California, showing the necessity of an immediate change in the management; on the other hand, however, from facts that will be explained at the meeting, the directors are more than ever impressed with the intrinsic value of the property." The directors express the hope that every shareholder will, if possible, attend the meeting, and as it appears to be really a question of continuing or abandoning the concern, it is desirable that their hope should be realised.

Exchequer realised 1/2 to 3; advices have been received from the underground agent, who states that in the 400 ft. level a large body of ore from 18 in. to 4 ft. wide had been struck; the local newspaper says that 2 ft. of it is native silver; a box of the ore had been sent to Prof. Price's assay office at San Francisco, and yielded \$176 per ton. The special resolutions for the increase of capital were unanimously confirmed at the meeting on Wednesday, I.X.L., 1/2 to 1; sinking to the 400 ft. level was being continued, and also the cross-drift in the 200; and when the footwall of the lode has been reached the manager would advise the directors what course to adopt.

The Market for Hydraulic or Gold Washing shares on the Stock Exchange remains quiet, with very little business doing. The latest news from California speaks of partial storms giving a good supply of water at some places, but, upon the whole, the season has been far short of the average. Blue Tent, 3 to 3 1/2; a telegram received during the week announces another clean-up, with a return of \$8000. The manager reports that water is flowing well, and that the property is rapidly assuming a good position.

Huatafall (Sweden), 5 to 5 1/2; the advices are said to be satisfactory.

Lead Mine shares have not shown any material variation, and there are few transactions to record. Van, 34 to 36; the bottom of the mine is steadily improving, and is looking well; the four-

JUNE 30. 1877.]

The Master of the Rolls has appointed Mr. William Brooks liquidator of the West Dronfield Collieries Company.

Creditors of the Workington Collieries Company are requested to send in the particulars of their claims by July 17.

The Australian Agricultural Company's report for the year 1876 shows that the company's coal trade was almost exclusively confined to the neighbouring colonies, among which Victoria was by far the largest customer, the shipments to that colony amounting to more than 72 per cent. of the total quantity raised at the company's pits. In speaking of the colonial demand, Mr. Gregson says that the company's coal is in great demand on equal terms, and that the demand is still being met by its means of supply. He advertises in terms of well-founded confidence to the small shipments to foreign ports during the year, and with a view to a wider distribution of the company's trade the directors have sanctioned the shipment of 5,000 tons at the company's risk. The accounts show an available balance of 50,234*l.*, from which a distribution of 2*l.* per share, absorbing 40,000*l.*, was paid in February, and it is now proposed to pay a further dividend of the same amount. To meet the losses and tear of 5,000*l.* has been placed, and the total added to this amount since 1870 has been 54,727*l.*

Mr. Angus, of Sheff.-I., has been obliged to succumb to difficulties brought about by connection with the Cardigan Iron, Steel, and Wire Company. The liabilities are estimated at 80,000*l.*, and Mr. J. U. Wing has been appointed receiver. The same gentleman has been appointed receiver in the winding up of the Industrial Coal and Iron Company.

WEST WHEAL SETON.—This mine is steadily advancing toward entering the Dividend List. In all probability a return will be made to the shareholders at the next general meeting. Notwithstanding the good financial basis on which the company stand, and the profitable results under which the mine is working, the shares are frightfully low, 30*l*. being the present price. Why such a price as this should exist under the above good features I cannot understand. In most instances the different points in the mine are looking very favourable. The 165 east is turning out saving work for copper. In the 165 west there is a very kindly lode. The 150 west is looking much better, and is now worth for tin and copper 25*l*. per ton. In the 140 west a promising lode exists, being at present 3 ft. wide.

QUICKSILVER.—The production during the month of May was over 8,200 flasks, the largest monthly out-turn on record. In May 1876 2,265 flasks went to New York by rail, and 398 flasks by sea. Our total exports thus far in 1877 show a large increase over those of 1876. Since our last reference several hundred flasks were sold by an operator at 40¢, he suffering a loss on the venture. Since then there has been quite a spurt in the market, fresh orders appearing for shipment to China. The result has been several large purchases at 41 to 41½ to 43¢, the market closing strong at the latter figure. It is more than probable that our next steamer for China on the 9th inst., the Gaelic, will carry a large shipment. —*San Francisco Commercial Herald*, June 5.

MESSRS. J. TAYLOR AND CO.
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ASSAYER AND ANALYTICAL CHEMIST,
SWANSEA.

Notices to Correspondents.

* * * Much inconvenience having arisen in consequence of several of the Numbers during the past year being out of print, we recommend that the Journal should be kept on receipt; it then forms an accumulating useful work of reference.

DECAUVILLE RAILWAY.—With reference to the letter in last week's issue "W. F. S." can obtain full particulars on application to us.—WM. BIRD and Co., Laurence Pountney Hill, June 27.

WEST GREAT WORK.—Can any reader inform me when the winding-up of this mine is likely to be completed; and how much per share is likely to be returned?—SHAREHOLDER.

THE SUPPLEMENTARY SHEET.—We have received occasional complaints, and of late a good many, that the Journal is delivered by country booksellers without the Supplement. Subscribers would oblige us by demanding that the paper should be handed to them complete, as every Journal is accompanied by the Supplement when it leaves our office, and the fault of omission must rest with the country bookseller or their London agent.

IMPORTANT NOTICE.—REDUCTION OF POSTAGE ON THE "MINING JOURNAL."—In consequence of the new POSTAL CONVENTION, which came into operation on July 1, the postage of the Mining Journal to many countries will be reduced to one fourth. Henceforth the subscription will be 1/10s. 4d. per annum (39 frs.), postage included, for the following countries. The amount will, if desired, be collected at the subscriber's residence at the end of each year. The subscription continues until countermanded:—Austria, France, Belgium, Denmark (including Iceland and the Faroe Islands), Egypt, Germany, Gibraltar, Greece, Heligoland, Italy, Luxembourg, Netherlands, Norway, Portugal (including Madeira and the Azores), Roumania, Russia, Serbia, Sweden, Switzerland, United States, Malta, Turkey, Morocco, Tunis, and the Canary Islands. Spain 1/19s. (50 frs.)

Received.—R. Bliss (San Francisco). The particulars will be published when received.—"Mercator" (New York). We shall be glad to hear of opportunity offered.—"S. H." (New York). We believe in next week's Journal—"Shareholder" (Van Consoles) should write to the office—"J. M." (Neath)—"Miner" (Leeds). The remarks are not adapted for publication; they are personally offensive. You should write in a different spirit if you desire to have your letters inserted.—"E. Y." (Glasgow).—"Correspondent" (Bath). Yes—"Subscriber" (Dorchester).—"B. C." (Paisley). Should be forwarded—"T. H." (Newcastle).—"A. J." (St. James).—"T. W." (Turin).

AMERICAN SUBSCRIBERS.—In reply to several enquiries, it may be stated that subscribers in the United States can be supplied with the Mining Journal post free, at the price of \$5.00, gold per annum, payable in advance, by remitting to Mr. D. Van Nostrand, publisher, and importer of scientific books, &c., Murray-street, New York; or, direct to our Office, 28 Fleet-street, E.C.

THE MINING JOURNAL.

Railway and Commercial Gazette.

LONDON, JUNE 30, 1877.

THE PRICE OF COAL, AND COLLIERS' WAGES.

The important question as to the present price of coal in its relation to the wages paid to the colliers, is now receiving more than ordinary attention, in consequence of the action taken by the workmen, and supported by their leaders. The latter, whilst admitting that the business doing in coal is the reverse of active, and that the production—although there are some thousands of men on strike—is far above the consumption, yet counsel the men to stand out in opposition to a reduction of wages. This, in all probability, is the result of the relationship that exists between the miners and those they maintain, for it cannot be based on a knowledge of the price which coal is now realising in our home and foreign markets, and the competition that prevails in them. The simple fact that with so many colliers walking about idle, coupled with the knowledge that in most of our mining districts the men are working short time, should be sufficient to show the greatest dullard that the time is not opportune for waging a war against their employers on the wages question, seeing that with so many collieries now standing prices have given way, and have still a lowering tendency.

Miners as well as others well know that it is not to the advantage of an owner to keep his colliery idle, seeing that there is certain work that must be done both day and night, involving a good deal of expense, so that whilst the men merely lose a portion of their wage—receiving a weekly sum from their Union—the masters lose not only whatever profit they might have obtained from the sale of a certain quantity of coal, but have also to pay a staff of officials and workmen the same as if the concern was in full operation. But there are various other ways by which the position of colliery proprietors could be made most accurately without the men resorting to a strike. Amongst the most reliable of these may be instanced the price of coal at the close of 1871, before the advances to the men commenced, and the rate at which coal is selling just now. If this is done it will be found that wages are now higher, although coal is less in value than it was at that period, whilst the expense attending the working of collieries is much greater owing to the carrying out of the provisions of the Mines Regulation Act, which came into operation in 1873. That this is actually the case, we have only to ascertain the selling price of coal in London and other places, and test it with the wages paid. That the men are in receipt at present of higher wages than before the advance of 1871 is fully borne out by a diagram prepared by Mr. ROWLEY, the secretary of the West Yorkshire Coalmasters' Association, showing the reduction and advances made in miners' wages from November, 1871, up to the present time. The following will show the total advances up to 1873, and the rate at which men are now paid above, or otherwise, the prices of 1871:—

	Advance made per cent.	Present percentage above 1871.
Lancashire	65.00	7.32
West Yorkshire	79.18	11.43
South Yorkshire	57.08	5.0
East Scotland	85.25	all off
North Wales	47.07	1.25
Somerset	60.10	1.0
Durham	58.07	all off
Cumberland	54.00	6.0
Northumberland	50.00	1.18 less
Forest of Dean	40.00	all off
North Staffordshire	45.00	2.5 less
South Staffordshire	50.19	19.0

From the above it will be seen that with few exceptions the miners are now in receipt of higher wages than in 1871—Lancashire, where so many are now out on strike, showing favourably in comparison with others; West Yorkshire, where the men appear to be so dissatisfied with wages—higher by 11.43 per cent. than in 1871 that they instructed their delegates to propose at the late Conference the entire stoppage of all collieries for a month or six weeks, one would think should have been the last to complain. But going a little further into figures, we are able to show what wages were paid in 1871 in the various districts, so that the present position of the miners can be seen by adding the percentage or reduction, as the case may be.

The daily wages were:—		
East Scotland	8 hour shifts 6s. 0d.	
West Yorkshire	4s. 10d. to 7s. 3d.	
South Yorkshire	5s. 4d., coal gives low.	
North Wales	5s. 8d., coal for self, half-price.	
Lancashire	5s. 6d.	
Somersetshire	4s. 4d. to 4s., coal and powder free.	
Durham	4s. 8½d., coal for leading.	
Cumberland	5s. 4½d.	
Northumberland	5s. 6d. to 6s. 1d., house free, coal for leading.	
Forest of Dean	5s. 3d.	
N. Staffordshire	5s. 0½d.	
S. Staffordshire	4s. 6d. to 6s.	

If figures go for anything, it is evident that the miners, taken altogether, are not quite so badly off as their lamentations would lead us to believe, but even those in Lancashire who have now the full support and sympathy of the National Miners' Association, seeing that their average wages will only be a trifle below 6s. a day, South Yorkshire re-estimated with 5s. 6d. for eight hours work on the average, and West Yorkshire with a trifle more. But taking the rate of wages in the different districts, and looking at the depression in the coal trade, as well as in others in which coal plays an important part, it appears that the men cannot be so badly off as many of their leaders would make us believe. Reduction of income to any class is always objectionable, but there are seasons when it is only right that it should be submitted to, especially where it may be the means of future benefit.

The tables we have given show plainly the position of the miners from the statement of Mr. ROWLEY, but perhaps they will be more complete if we supplement them with some of our own, showing

the first advances made in 1871, the price of coal at that time and now in the London market, which is the most reliable that we know of, and can be readily tested. They are as follows:—

	Advance per cent.	Price of coal, 1871.	Present price of coal—1877.
Scotland, Nov. 1871	11.0	26s.	25s.
West Yorkshire, Oct. 1871	7.5	26s.	25s.
North Wales, Jan. 1872	10.25	26s.	25s.
Lancashire, Oct. 1 71	10.0	26s.	25s.
Somersetshire, Jan. 1872	10.0	26s.	25s.
Durham, Feb. 1872	23.0	26s.	25s.
South Yorkshire, Dec. 1871	10.0	26s.	25s.
Cumberland, Dec. 871	5.0	26s.	25s.
Northumberland, Feb. 1872	10.0	26s.	25s.
Forest of Dean, Oct. 1871	5.0	26s.	25s.
North Staffordshire, Sept. 1871	10.0	26s.	25s.
South Staffordshire, Oct. 1871	11.0	26s.	25s.

This last table will show who have been the greatest losers by the reduction which has taken place in the price of coal; whilst with the two others our readers will realise the past and present state of the coal trade, and where sympathy is really due.

THE AMERICAN IRON TRADE.

Although we have lost to a great extent the American demand for our railway iron, it can scarcely be said that the production of rails effected last year by the Americans themselves showed the progress which might have been anticipated under all the circumstances. During the ten years ending with 1876 inclusive steel and iron rails were made in the United States as follows:—

Year.	Tons.	Year.	Tons.
1867	432,180	1872	1,000,900
1868	504,714	1873	890,977
1869	593,588	1874	729,413
1870	621,000	1875	792,512
1871	775,733	1876	879,829

The American railroad interest has clearly not yet fully rallied from the terrible disasters which followed the great panic of 1873; at the same time, 1875 and 1876 were years of recovery, and 1876 must be said to have rolled up a substantial total. It is interesting to note that steel rails have pushed iron rails very much aside in the United States during the last five years. Thus the production of steel and iron rails effected by the Americans in that period has been as follows:—

Year.	Steel rails—tons.	Iron rails—tons.
1872	94,970	905,830
1873	159,015	751,932
1874	144,944	534,469
1875	29,583	501,619
1876	412,461	467,168

The manufacture of iron rails has thus steadily declined, while that of steel rails has just as steadily increased. The production of rolled iron other than rails has attained a very greatly increased importance during the last decade, the manufacture having moved on as follows since 1867:—

Year.	Tons.	Year.	Tons.
1867	579,838	1872	911,992
1868	594,283	1873	1,078,368
1869	612,430	1874	1,110,147
1870	705,000	1875	1,097,867
1871	710,000	1876	1,042,101

It follows that while the aggregate production of rolled iron in the United States in 1867 was 1,041,946 tons, the corresponding production had risen in 1877 to 1,921,730 tons. In the same year, 1873, the production was 1,933,445 tons, so that after all the figures kept up tolerably well in 1876. If the Americans are consuming less rolled iron than they did annually in 1872 and 1873, it is British and not American ironmasters who have suffered from the curtailment in the consumption.

We have only given the production of steel rails in the United States for the five years ending with 1876, but there is no reason why we should not recapitulate the manufacture effected during the ten years embraced between 1867 and 1876 inclusive:—

Year.	Tons.	Year.	Tons.
1867	2,650	1872	94,970
1868	7,225	1873	129,015
1869	9,650	1874	144,944
1870	34,000	1875	29,583
1871	38,250	1876	412,461

The production has exhibited an unchecked progress year by year. This is due to the fact that American railroads are especially benefited by steel rails, the cupriciousness and occasional severity of the American climate exerting a very trying effect upon permanent ways across the Atlantic. Up to 1871, however, steel rails were comparatively an experiment in the United States as well as in Great Britain; it was only in 1872 that they began to be used upon a large and important scale; now all the important trunk American railroad companies are steel railing their main lines, and it is only struggling companies connected with the Southern States which are buying iron rails. As regards the general rail production of the United States last year, it may be interesting to add that 353,925 tons were made in Pennsylvania, 181,490 tons in Illinois, 100,799 tons in Ohio, 57,306 tons in New York, 29,333 tons in Indiana, 21,394 tons in Tennessee, 21,280 tons in Wisconsin, 20,903 tons in Missouri, and 18,884 tons in Maryland, &c.

THE COAL AND IRONSTONE FIELDS OF INDIA.

Owing to the opening out of extension railways in India, more than ordinary attention has of late been directed to the vast mineral deposits permeating that immense country. Coal in particular, it may be said, is now being extensively worked in several districts to provide in particular for the wants of the railway companies. This is shown by looking back only a few years, for whilst in 1866, when railways were scarcely known in India, our exports of coal there were 650,086 tons, whilst in 1875, with an extension of railway system in comparison with the former year, the quantity of coal imported from England was only 518,645 tons. The question that has lately arisen is as to whether the coal and ironstone could be profitably worked by private enterprise instead of leaving such important matters in the hands of the Government, more especially as relates to coal. That such could be done there does not appear to be much doubt, no more than there does that the stores of fuel and ore are so extensive that not only could the whole of India be supplied, but the steamers belonging to our mercantile marine and the Navy as well that call at the Indian ports. The survey of the coal fields of India by the Government Inspector puts us in possession of a great deal of valuable information as to the resources stored up in that important portion of Her Majesty's dominions. The Damuda Valley coal field is upwards of 2000 square miles in extent, containing all the productive measures, consisting of ironstone, sandstone, and coal, the last verging up to 35 ft. in thickness. The Raniganj is the most important district, being from 120 to 160 miles north-west of Calcutta along the valleys of the Damuda and Adjai rivers, whilst the Karanpura field, which covers an area of 472 square miles, is estimated to yield about 8,750,000 tons of coal.

The great valley of the Ganges, connected as it is with the ocean and railways, contains enormous quantities of coal and iron. In the Warora district the coal measures vary in thickness from 20 to 50 ft. with ironstone. Mr. MARKHAM, too, in his statement as to "the moral and material progress of India during the year 1872-3," alludes to the value of the minerals in India, and the field there is that should be opened out for the development of the resources of that great country. Mr. HUGHES, in a note on the raw materials for iron smelting in Raneegeunge district, gives analysis of the coal there, and discusses the question whether the impure limestone called "kunkur" will do for a flux, which with some limitations is answered in the affirmative. The extent of the coal measures of India, although a large tract of country has been surveyed, has yet to be approximately ascertained, and the same remark equally applies to ironstone, which, it would appear, is almost inexhaustible, a great deal lying close to the surface. Mr. HUGHES, in his report of the Lohara ironstone, considers it one of the mineral wonders of the country, whilst Mr. WALTER NESS states that it is one of the finest ironstone fields known to exist, being a hematite, and as such very well suited for converting into Bessemer steel, and of which it would produce a quality second to none. But the iron ores are as varied as they are vast, for they cover an immense area of ground. In the preliminary report to the Government of India the character of the ores for the following localities are—

Raneegeunge coal field, clay iron ores; Karunpura coal field, south of Hazarebagh, clay iron ores; Nerbudda Valley, north of Gurgaon, hematite; Yenak, in Bevar, hematite sandstone and conglomerate; Deohourie and Kaleedunge, in Kumaon, psilotic hematite; Bannur and Khyma, in Kumaon, specular and massive hematite; Raneegeunge, in Kumaon, specular and massive hematite.

In the same paper the question is discussed as to the practicability of establishing remunerative smelting works, and the answer is in the affirmative under certain conditions. This is more especially in the case with respect to Raneegeunge, where Mr. MARKHAM states with a hill two miles long and half-a-mile broad, the surface of which was "covered with almost pure iron ore." One of our highest authorities—Dr. SIEMENS—in a report of last year as to the Bengal ore, stated that the results of experiments made with it were in every way satisfactory. With such vast fields, then, of coal and ironstone, with the necessary flux at hand, there certainly does not appear any reason why the seams of coal should not be far more extensively worked than they have been, or why India should not make all the iron and steel that she requires. There are all the elements of the resources of a country for those products, its consumption of which is increasing daily almost, and will continue to do so. We, therefore, do not see why private enterprise and English capital should not be brought into requisition, to the advantage not only of India, but of those by whose means the resources of it were developed.

In addition, however, to the valuable beds of coal and ironstone there are also other minerals that could be profitably worked. In the Wardha coal field there is manganese ore in botryoidal masses in the red clay series, whilst in some places there are tin, bismuth, pyrites, and gold. In the Nerbudda Valley also Mr. MAYNARD discovered a deposit of copper on an island near Berman Ghat. These particulars, brief as they are, will show what valuable mines of wealth are ready for opening out in our own possessions, where there are all the safeguards for the introduction of capital, and the necessary laws for the protection of all parties.

COAL AND IRON IN THE UNITED STATES.—

Coal has not varied materially in price in Pennsylvania. The total production of anthracite and bituminous coal in Pennsylvania to June 2 this year amounted to 9,167,712 tons, against 7,869,315 tons in the corresponding period of 1876, showing an increase of 1,298,397 tons this year. The movement of coal and coke over the Pennsylvania railroad to May 28 this year amounted to 2,728,302 tons, of which 1,562,474 tons were coal. The Philadelphia market for steel rails has been quiet and steady at late quotations. One sale has been noted of 5000 tons, to be paid for partly in cash, and the balance in old rails. A few small lots have changed hands at \$17 to \$17½ cash at the mills. There has been nothing of a very special character to note with regard to steel rails at Philadelphia; buyers have presented themselves tolerably freely, but as there has not been much change in the state of financial affairs negotiations are a long time pending before they are brought to a conclusion. The manufactured iron trade of Pennsylvania has been depressed, but in consequence of two or three important contracts having been closed within the last day or two, the outlook is considered to be rather more encouraging upon the whole. One of these contracts relates to the iron required for three new steamers, each of about 1100 tons burthen, about to be built by Messrs. Roach and Son for the Alaska and San Francisco trade. There is little new to report with respect to steel at Pittsburgh except that business is falling off, as it usually does, at this season of the year. The manufactured iron trade of Pittsburgh district remains in much the same state; business is generally dull.

IRONSTONE IN ENGLAND.—The quantity of ironstone raised in the United Kingdom during 1876 was 12,159,580 tons; of this Cleveland raised 6,540,101 tons, or better than one-half.

CAERPHILLY COMPANY.—An application was made before Vice-Chancellor Sir James Bacon on behalf of the official liquidator, seeking to make three of the late directors of the above company liable in respect of certain share warrants of the nominal value of 125/ each, alleged to have been given to the directors to enable them to qualify, and to have formed part of a number of share warrants handed to the vendors as part of the purchase money of the colliery. A similar application in the matter of the same company made against Sir Edwin Pearson, one of the late directors, was granted in this branch of the Court, and the decision was affirmed by the Court of Appeal. The present respondents were named Maclure, Roberts, and Ormerod. Mr. Maclure resisted the claim, and conducted his own defence. Mr. Roberts submitted. Mr. Ormerod's defence substantially was that he was not one of the first directors of the company, and not a director until after the transaction of the sale to the company had been completed. He maintained that the appearance of his name as director in the first prospectus of the company was wholly unauthorised.—Sir K. Jackson, Q.C., and Mr. Methell, were for the liquidator; Mr. Flemming, Q.C., and Mr. Ingle Joyce for Mr. Ormerod.—The Vice-Chancellor considered this quite as clear a case as that of Sir Edwin Pearson, and he should make an order in the terms of the application.

UNSINKABLE VESSEL OF WAR.—Those interested in the improvement of our present facilities for naval warfare have already heard of the unsinkable vessel of war proposed by Mr. W. M. Pollexfen, and that gentleman has now issued two letters with a view to render the principle thoroughly intelligible to those who are unacquainted with technical and mathematical tests. The principle of the invention can be very briefly explained; it consists in making the ship as near as practicable a solid mass of timber, the only deviation from solidity being the construction of an impregnable compartment in the centre for carrying the armament and machinery. The rectangular hold or space is of course arranged to be of suitable size, and Mr. Pollexfen even proposes to provide that the ship shall continue to float although the reserved compartment shall be completely filled with water, and still have buoyancy to spare. He points out that such a ship would be invincible, for though completely swamped, and the engine or other rooms flooded for a time, she could be manned with her sails and remain as formidable as any sailing war vessel until her damage was repaired. But this is not all; the whole of the exposed portion of the hull being constructed of solid timbers, Mr. Pollexfen suggests with much show of probability that even a torpedo would not disable his ship, since the most it would in all probability do is to rend away, without detaching, one or two of the outside timbers, so that no less than a whole succession of torpedo attacks would render the vessel unseaworthy. He remarks that timber can be prepared so as to resist fire to a great extent, and if this preparation were found to interfere with the required weight of the timber in any particular instance, another method can be resorted to—that of rendering the exposed timbers fireproof. Mr. Pollexfen thinks it reasonable to expect the Admiralty to give the invention a practical trial, so as to prove the value of an invention which has met with such general favour and received so many wishes of success.

THE BAKER BLOWER.—The blowers manufactured by the Saville-street Foundry Company, of Sheffield, and which has given much satisfaction, for supplying the blast to furnaces, and many similar purposes, consists mainly of a casing, enclosing three horizontal drums, the upper one carrying two blades, the same length as the drum, and the ends of which run close to the ends of the casing. The lower drums have a portion of their circumference slotted out to admit the blades, and run at double the speed of the drum. These drums thus act as valves, admitting the air first, but preventing any appreciable loss on the delivery side of the uppermost blade. The drums are connected by strong gearing; the shafts run in long bearings, and the whole of the parts are of iron. A steady blast of about 1½ lb. per square inch is easily maintained in an ordinary cupola, with less power, it is claimed, than would drive a fan giving less than 1 lb. pressure. Some recent experiments with a cupola

There is a feeling among the colliers that rather than submit to any further reduction at the pits generally they would strike. They are in some cases lower now than they ever were, even before the prosperous times and high prices—excepting always, of course, the eight-hour system and the weighing machine at the pits' mouths. Just now is a state of suspense with regard to the pits generally; all hangs upon the attitude the masters may next take. The East Slade men are still out, nor is there much prospect at present of a settlement. There is some talk even of shutting down the pit and stopping the colliery altogether, but we look upon this report as held out *in terram*, though we think it will fail if it has that object. The men are already seeking employment elsewhere, and unless the company really means to finally shut up it will be found an expensive

compounds, such as sulphates or sulphides. He prefers for castings of a comparatively soft kind to mix wrought-iron scrap and cast-iron as before, and to add every 10 lbs. of the wrought-iron 1 lb. of the cast-iron, and 3 ozs. of crushed Spanish pyrites, containing from 14 to 3 per cent. of copper, and about 48 per cent. of sulphur, such as the pyrites now largely used by the makers of sulphuric acid. He also adds 3 ozs. of metallic tin, or instead of it 16 ozs. of tin-plate scrap.

PUMPS.—In the construction of pumps with valves of india-rubber or other similar flexible material an arrangement is proposed by Mr. JAMES WATSON, of Greenwich, which will much simplify and cheapen such valves. He fits the sheet of ordinary valve rubber between two faces properly shaped, and with sufficient space between them to allow the valve to fit closely in contact with the faces and to rise from the same. The valve is held at its central portion securely between the two faces, which are so formed and arranged that there is only just sufficient space between them at this central portion to allow the valve to be fitted therein, but one face is curved or sloped away from this central portion on one side of the valve, and the other face is curved or sloped outward on the other side of the same. Through the flat portions which are the valve seats he forms apertures or ports for the passage of the water, while the curved portions serve as stops or guards. The said seats are preferably perforated with small holes or grates, and when the valve is open the water passes freely through them, but they are covered by the valve when the same is closed. One of the said perforated or grated apertures is the suction or inlet passage, and the other is the delivery or discharge aperture, and it will thus be seen that he makes one valve serve both as a suction and delivery valve. The valves are very readily applicable to either single or double-acting pumps. In single-acting pumps they may be arranged at either end of the barrel in the usual manner; and in double-acting pumps they may be arranged at one or both ends of the pump barrel. By this invention the valves are arranged close to the barrel of the pump, thereby diminishing the air space and affording great facility for examination of the said valve. Moreover the simplicity of construction of the said valves will considerably reduce the cost of the manufacture of pumps. In adapting the invention to oscillating pumps he may construct the same with trunnions either at the ends or at the centre of the barrel. One trunnion connects with the suction pipe or passage, and the other with the delivery or discharge pipe of the pump.

REDUCTION OFFICER.

WANTED, TO PROCEED TO CENTRAL AMERICA, on the 17th July next, a Person acquainted with the TREATMENT OF AURIFEROUS ORES. Must have had at least two or three years' practical experience as a Gold Miner. Copies only of testimonials as to character and ability may be addressed "N," care of Mr. G. Street, Advertising Offices, 30, Cornhill, E.C.

SECRETARY WANTED.

WANTED, A GENTLEMAN, TO TAKE THE SECRETARYSHIP of a LIMITED COMPANY. One who could put some money in the Mine, or place Shares, &c. The mine is situated in the richest district in Cornwall for Tin and Copper, and the mine is opening rich. For particulars, address to "B," MINING JOURNAL Office, 26, Fleet-street, London, E.C.

TO MINING COMPANIES.

WANTED, A SITUATION AS CLERK, by a Young Man, who is also able to dial, and keep up the plans of a mine. Good references. Address, "M," MINING JOURNAL Office, 26, Fleet-street, London, E.C.

WANTED, for a Lead and Copper Mine in active operation, situated in Wales, a PRACTICAL MAN as FOREMAN DRESSER and SURFACE MANAGER. Must be thoroughly acquainted with dressing machinery, and the manipulation of mixed ores. Address, "T. B. P.," Post Office, Carnarvon, North Wales.

WANTED, THE ADVERTISER, an ASSAYER, last employed as Chemist and Manager in a Spleter Works, DESIRES an ENGAGEMENT. He has had experience of the extraction of gold, silver, and lead from their ores; also would not object to go abroad. Speaks Spanish. Highest references. Address Mr. THOMAS BOWEN, Pentrich, near Derby.

THE VAN MINING COMPANY (LIMITED). Notice is hereby given, that the Directors have THIS DAY DECLARED a QUARTERLY DIVIDEND of £12,000, being SIXTEEN SHILLINGS PER SHARE on the 15,000 shares of the company, PAYABLE, free of income tax, on and after the 10th day of July next. The Transfer books will be closed from the 4th to the 10th proximo, both days inclusive. By Order, W. J. LAVINGTON, Secretary. 14, Austinfriars, London, E.C., June 30, 1877.

THE ANGLO-AUSTRALIAN GOLD MINING COMPANY (LIMITED). Notice is hereby given, that an EXTRAORDINARY GENERAL MEETING of the Anglo-Australian Gold Mining Company (Limited) will be HELD at the office of the said company, No. 8, Austinfriars, in the City of London, on MONDAY, the 2nd day of July, 1877, at One o'clock P.M. precisely, for the purpose of considering the following Special Resolution passed at an Extraordinary General Meeting held on Monday, the 4th day of June, 1877:— "That the Anglo-Australian Gold Mining Company (Limited) be wound-up voluntarily. By Order, J. H. MURCHISON, London Manager and Secretary. 8, Austinfriars, London, E.C., 14th June, 1877.

MESSRS. GREGORY, WHITAKER, AND CO., STOCK AND SHARE DEALERS, 81, BISHOPSGATE STREET WITHIN, LONDON. Beg to notify to their clients and investors generally that Shares offered in the LANCASHIRE LEAD MINE at low prices, through the medium of this Journal, are merely, if ever, delivered to the Buyer. To ensure the delivery of Shares bought, purchasers are cautioned to pay cash only on the delivery of transfers, accompanied by the holders' certificates.

IMPORTANT TO CAPITALISTS.

FOREIGN BONDS.—These should be sold before prices recede still further. Messrs. ALEXANDER ROBINSON AND CO. recommend for purchase:— LIGNO MINERAL WOOD PAVING SHARES, VAN MINE, ROMAN GRAVELS, and COMBELACK TIN MINE. The "Stock Exchange Review" (specimen number sent free) contains particulars of these and many other good investments, and should be read by large and small capitalists. The firm will have pleasure in supplying information based on practical knowledge. 35, Throgmorton-street, London, E.C., April 28, 1877.

MINING INVESTMENTS.—The present time being considered a favourable one for mining operations, the ADVERTISER, who has had nearly 20 years' experience in mining—17 in Cornwall, and 12 in the management of mines in London—OFFERS his SERVICES in all matters relating to Mining Companies and advice in the selection of Shares in bona fide and well-managed concerns, either for investment or speculation. Having an established correspondence with some of the most eminent miners and mineowners in the kingdom, he has exceptional facilities for acquiring early and sound information on prominent mining properties. A Selected List of Mines forwarded on application. CHARLES BROUGHAM PARRY, Gracechurch Buildings, Gracechurch-street, E.C.

MR. THOMAS THOMPSON, JUN., STOCK AND SHARE DEALER, AND MINING AGENT AND ACCOUNTANT, 1, PALMERSTON BUILDINGS, BISHOPSGATE STREET, LONDON, E.C.

WILLIAM FRANCIS, M. and C.E., 2, DERWEN VILLAS, MOLD. Over Twenty-five years' experience. Pupils received for a Course of Instruction in Surveying, Dialling, Levelling, Geology and Mineralogy—their practical application to the various branches of Metalliferous Mining, Quarrying, &c. Terms on application.

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CAPTAIN ABASLOM FRANCIS MINING AGENT, ENGINEER, AND SURVEYOR GOGINAN, ABERYSTWYTH.

TRAMWAYS INTELLIGENCE FOR 1877.—Second Edition, just ready, price 1s. 6d. With useful Tables for Investors. EFFINGHAM WILSON, Royal Exchange, London.

GOLDENHILL COBALT, NICKEL, COLOUR, BORAX, AND CHEMICAL WORKS, NEAR STOKES-UPON-TRENT, STAFFORDSHIRE. JOHN HENSHALL WILLIAMSON, MANUFACTURER AND REFINER, Purchaser of Borate of Lime and Tincal.

In the Court of the Vice-Warden of the Stannaries. Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACTS, 1862 and 1867, and of the NEW CHIVERTON MINING COMPANY (LIMITED).—By an Order, made by His Honor the Vice-Warden of the Stannaries, in the said Matter, dated the 25th day of June last, on the Petition of William Harvey, Henry Whitford, William West, William John Rawlings, William Husband, Francis Harvey, and Nicholas James West (carrying on business at Hayle, within the said Stannaries, as general merchants, under the style or firm of "Harvey and Co."), claiming to be creditors of the said mining company, IT WAS ORDERED that the said New Chiverton Mining Company (Limited) should be WOUND UP by this Court compulsorily, under the provisions of the Companies Act, 1862. HODGE, HOCKIN, AND MARRACK, Truro (Solicitors for the said Petitioners). Dated Truro, June 28th, 1877.

In the Court of the Vice-Warden of the Stannaries. Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACTS, 1862 and 1867, and of the NEW CHIVERTON MINING COMPANY (LIMITED).—The Vice-Warden has, by an Order made in the above Matter, bearing date the 25th day of June last, APPOINTED CHARLES WILLIAM CLINTON, of Truro, within the said Stannaries, an Officer of the said Court, to be the OFFICIAL LIQUIDATOR of the above-named company. FREDERICK MARSHALL, Registrar. Dated Registrar's Office, Truro, 28th June, 1877.

In the Court of the Vice-Warden of the Stannaries. Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACTS, 1862 and 1867, and of the NEW CHIVERTON MINING COMPANY (LIMITED).—Notice is hereby given, that ALL CREDITORS of the above-named company are required, on or before the 7th day of July next, to TEND in their NAMES and ADDRESSES, and the AMOUNTS and PARTICULARS of their SEVERAL CLAIMS, to CHARLES WILLIAM CLINTON, the Official Liquidator of the said company, at the Stannaries Court Office, in Truro, within the said Stannaries. FREDERICK MARSHALL, Registrar. Dated Registrar's Office, Truro, June 28th, 1877.

In the Court of the Vice-Warden of the Stannaries. Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACT, 1862, and of the WHEEL GRAMBLER MINING COMPANY.—By the direction of His Honor the Vice-Warden, Notice is hereby given, that, on WEDNESDAY, the 11th day of July next, at Eleven o'clock in the forenoon, at the Registrar's Office, at Truro, in the county of Cornwall, this Court will PROCEED to MAKE a CALL of TWO SHILLINGS AND SIXPENCE PER SHARE on all the contributories of the said company, settled on the List of Contributories thereof as present members. All persons interested therein are entitled to attend at the time and place afore said to offer objections to such call. CHARLES WILLIAM CLINTON, Official Liquidator. Dated Stannaries Court Office, Truro, the 25th day of June, 1877.

In the Court of the Vice-Warden of the Stannaries. Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACT, 1862, and of the EAST WHEEL BASSET MINING COMPANY.—TO BE SOLD, under the direction of the Registrar of the said Court, on Monday, the 9th day of July next, at Eleven o'clock in the forenoon, at the EAST WHEEL BASSET MINE, in the parish of Redruth, within the said Stannaries, in one or more lots or lots, and subject to such conditions as shall be then and there stated and produced, all that the INTEREST of the said company of and in the SETTS under which its mining operations have been carried on, together with the WHOLE of the MINING PLANT, MACHINERY, MATERIALS, AND EFFECTS, Excepting all ores at surface, belonging to the said company, and being within and upon the said Mine, and comprising:— ONE 60 in. cylinder PUMPING ENGINE, with TWO BOILERS, 10 tons each. ONE 36 in. cylinder STAMPING ENGINE, 9 ft. stroke, with ONE BOILER, 11 tons, fly wheel, &c., complete; two 16 head, iron axles, with frames, lifters, heads, &c., complete. ONE 24 in. cylinder WINDING ENGINE, 8 ft. stroke, with ONE BOILER, 10 tons, fly wheel and cage, and copper ore crusher, complete. Also, the ACCOUNT HOUSE FURNITURE, and numerous other articles and effects in general use in mines, for full particulars of which apply to Mr. JOHN HENRY HANLEY, the Official Liquidator of the said company, at the Stannaries Court Office, Truro; and for inspection of the said machinery, &c., to the Bailiff in charge at the Mine. HODGE, HOCKIN, AND MARRACK, Truro. (Solicitors for the said Official Liquidator.) Dated Stannaries Court Office, Truro, June 28th, 1877.

THAT VALUABLE LEAD MINE, EDGE RAKE, AND PLANT. In full working order (if not disposed of before, and notice given), TO BE SOLD, BY AUCTION, by Mr. PHILIP HEATON FLINT, on July 2nd, 1877, CRUSLING MILL, 20 in. rollers; 50 fms. 12 in. plunger lift, complete; 10 fms. 12 in. drawing lift; 10 fms. 8 in. drawing lift; 64 fms. 6 in. plunger lift, complete; 15 fms. 7 in. drawing lift; 12 fms. 6 in. drawing lift; 2 crab winches, double and single gear; 100 fms. 3/4 in. chain, nearly new; smiths' bellows and anvil; about a ton of miners' tools, in lots; jiggings hutchies and sieves; miners' dial, by Wilson and Co.; and sundry other articles. Auction to commence at Twelve o'clock, and, in the meantime, the machinery may be viewed, and every information given, upon application to Capt. BARRELL, the late manager, at Port Erin; or JAMES SPITTALL, Solicitor, Douglas.

THE GOLD COMPANY (LIMITED). IN LIQUIDATION.

THE LIQUIDATOR INVITES TENDERS FOR THE LEASE of MINES and MINERALS, including GOLD and GOLD ORE, within a Tract of Land, situated in the parish of Llanelltyd, near Dolgellau, in the county of Merioneth, together with the BUILDINGS, PLANT, and MACHINERY erected thereon, for the development and working thereof, and comprising tramway, mill, engine house, carpenter's and blacksmith's shops, dwelling houses, store-rooms, and powder magazine. Also, horizontal STEAM-ENGINE, 35 horse power, rock crusher, and powerful stamping machinery, blankets, beds, and appliances, Britten pans, tools, and stores. Further particulars, with forms of tender and detailed schedule of the tools, stores, &c., may be obtained on application to Messrs. STEVENS, WILKINSON, and HARRIS, the vendors' solicitors, 24, Coleman-street; or to the undersigned, 9, King's Arms-yard, London, E.C. Tenders must be sent in to the Liquidator on or before the 15th day of July, 1877. 9, King's Arms-yard, E.C., June 28, 1877. JAMES FRASER, Liquidator.

MINING PLANT, IN THE ISLE OF MAN. BRADDA MINING COMPANY. IN LIQUIDATION.

TO BE SOLD, BY AUCTION, on Tuesday, July 3, 1877, the PLANT and MACHINERY, at the Bradda Mine, consisting of a 45 in. cylinder PUMPING ENGINE, condensing; 24 in. cylinder horizontal DRAWING ENGINE, high pressure; 24 in. cylinder ROTATORY ENGINE, for drawing and pumping, condensing; TWO 10 ton BOILERS; ONE 11 ton BOILER; CRUSLING MILL, 20 in. rollers; 50 fms. 12 in. plunger lift, complete; 10 fms. 12 in. drawing lift; 10 fms. 8 in. drawing lift; 64 fms. 6 in. plunger lift, complete; 15 fms. 7 in. drawing lift; 12 fms. 6 in. drawing lift; 2 crab winches, double and single gear; 100 fms. 3/4 in. chain, nearly new; smiths' bellows and anvil; about a ton of miners' tools, in lots; jiggings hutchies and sieves; miners' dial, by Wilson and Co.; and sundry other articles. Auction to commence at Twelve o'clock, and, in the meantime, the machinery may be viewed, and every information given, upon application to Capt. BARRELL, the late manager, at Port Erin; or JAMES SPITTALL, Solicitor, Douglas.

THE GOLD COMPANY (LIMITED). IN LIQUIDATION.

THE LIQUIDATOR INVITES TENDERS FOR THE PURCHASE of the PROPERTY of the ABOVE COMPANY, as situated in the District of Algoma, Province of Ontario, in the Dominion of Canada. The property consists of:— 1.—THE FREEHOLD of the BRUCE LOCATION, measuring 6400 acres, and comprising the Bruce and Wellington Mines. 2.—ALL the RIGHT of the said company in the UNEXPIRED TERM of a LEASE of the Huron Copper Bay Mine, for a term of 15 years, from the 1st day of May, 1874. 3.—THE BUILDINGS belonging to the said company at the said mines and locations, comprising engine and boiler houses, jiggings, crushing houses and sheds, furnace houses and stacks, two agents' and clerks' offices, blacksmiths' and carpenters' shops, store-house, and a number of good dwelling-houses and ordinary cottages. Also, a wharf at the Wellington Mine, about 1150 ft. in length, and warehouse affording every convenience for the loading of ships. 4.—ALL the MACHINERY and STORES belonging to the said company, consisting of hoisting and pumping engines, crushing and jiggings machinery, calcining furnaces, iron, timber, tools, &c. The property mentioned in Clauses 3 and 4 is subject, so far as regards any portions of it which are situated on the Huron Copper Bay location, to the option reserved to the lessors on the termination of the said lease of taking to any portion of the machinery and buildings at a valuation. The Wellington and Copper Bay Mines have been worked for several years by the above-named company, and large quantities of copper ores and yellow sulphides occurring in quartz have been produced, yielding, when dressed, from 18 to 23 per cent. in copper. It is believed that with a moderate outlay of capital the necessary works could be carried out for putting the mines again into a condition for producing large returns of ore; and for this purpose the machinery and works already existing could be easily made available. Tenders should be addressed to the Liquidator, JOSEPH GEORGE, Esq., No. 6, Queen-street-place, London; and will be received by him up to the 15th day of September next. The mines and properties may be viewed on application to the Agent in charge; Mr. G. H. PLUMMER, Wellington Mine, Lake Huron, Canada West; and further information may be obtained of the Liquidator, in London; or of G. G. FRANCIS, Esq., Montreal, Canada.—London, 26th June, 1877.

DING DONG MINE, NEAR PENZANCE.

FOR SALE, BY PUBLIC AUCTION, on Thursday, 5th July next, at Four P.M., at the Office, Chyandour, near Penzance, the MINE, as a going concern, with the LEASES and PLANT, consisting of TWO PUMPING, TWO WINDING, and ONE STAMPING ENGINE, with suitable PIT-WORK, and a large quantity of other materials. The mine is in a full state of working, and may be viewed on any day previous to the sale on application to Capt. WILLIAMS, on the Mine; or the Purser, Mr. R. WELLINGTON, at Chyandour.—Dated 19th June, 1877.

CRENVER AND WHEEL ABRAHAM UNITED MINES, CROWAN, NEAR CAMBORNE, CORNWALL.

TO BE SOLD, BY TENDER, either in One Lot or separately, all the PUMPING, WHIM, and other ENGINES, BOILERS, CALCINER, PNEUMATIC STAMPS, CRUSHER, and other remaining MACHINERY of these mines. May be viewed at the Mines, and catalogues and forms of tender may be obtained on application to Messrs. GOOD, DANIELS, and Co., 7, Poultry, London; or Mr. W. J. JOHNS, Edward-street, Truro. Tenders to be sent in to Messrs. GOOD, DANIELS, and Co., as above, on or before 16th July, marked "Crenver Tender."

FOR SALE, A VALUABLE MINERAL DEPOSIT, situated in the MINING and IRON CENTRE of SWEDEN, the ores of which contain ZINC, LEAD, and SILVER, in the following proportions per 100 parts:— Silver ... 0.033 per cent. Lead ... 16.7 per cent. Zinc ... 36.4 per cent. (The proportion of silver being equal to 75 ounces per ton of lead.) The assay being made by Fennquist, an Analyst of high standing in Sweden, from a general sample of well-dressed ore, taken from the surface openings. The deposits appear of very considerable magnitude; openings have been made to a depth of 40 feet, showing the lode to be several feet in breadth, the ore appearing richer as it gets deeper. The cost of transport from the mines to the North of England will not exceed 20s. per ton. The ore fields are distant from Hull or London only about seventy hours. Apply to JOHN MILLAR, Gothenburg, Sweden.

VERY VALUABLE MINES—SOUTH-WEST OF IRELAND.

EXTENSIVE AND RICH MINES OF SILVER-LEAD, BLENDS, COPPER, &c., which require only to be drained of water in order to make immediate returns of ore. Any amount of machinery may be driven by water-power. Capitalists will find this a safe and profitable investment; and reliable information may be obtained on application to Capt. W. THOMAS, who has had nearly 40 years' experience in the management of Mines in Ireland. Cappagh Mine, Ballydehob, Co. Cork, May 28th, 1877.

MINING STUDENTS AND CANDIDATES FOR COLLIERY MANAGERS' CERTIFICATES OF COMPETENCY may RECEIVE PRIVATE ADVICE AND ASSISTANCE by applying to Mr. W. FAIRLEY, Mining Engineer, Bloxwich, near Walsall. Send stamp for reply.

LEAD MINE NEAR CARSPHAIN, STEWARTRY OF KIRKCUDBRIGHT.

TO BE LET, for such number of years as may be agreed upon— THE WOODHEAD LEAD MINE, On the CRAIGENGILLAN ESTATE, situated in the Parish of CARSPHAIN, and Stewartry of KIRKCUDBRIGHT. This Mine was opened in 1838, has been wrought ever since, and has yielded a large quantity of lead of the finest quality. The Plant, Machinery, &c., can be had at a valuation. JAMES M'CALL, at the Mine, will show the underground workings, as also the plans and sections; and for further particulars application may be made to ALEXANDER M'CURRY, Solicitor, Ayr; or to Mr. THOMAS SMITH, Land Steward, Berwick Main, Dalmellington, Ayrshire. Ayr, 18th June, 1877.

TO BE LET, under the Ecclesiastical Commissioners, a LEAD MINE: 6 cwt. of ore, found in quarrying, just sold. Address, H. TRIPP, Winford, Bristol.

HEMATITE IRON ORE ROYALTY, AT MOOR ROW, BIGRIGG MOOR, NEAR WHITEHAVEN.

TO BE LET, BY TENDER, for a term of years, to commence from the 1st September, 1877.— THE IRON ORE under SEVENTY-FIVE ACRES of LAND at MOOR ROW, in the parishes of Cleator and Egremont, in the county of Cumberland, in the occupation of Mr. John Postlethwaite, of the Hollins, Whitehaven. This Royalty is situated in the centre of the Bigrigg District, is bounded on the north-west and south by mines of Messrs. Lindow, and on or towards the east by mines of Messrs. Ainsworth and Co. and Messrs. Burnysat, Brown, and others, and in its immediate neighbourhood are other well-known mines worked by Lord Leonfield, Messrs. Lindow, John Stirling, Esq., and the Cleator Iron Ore Company, which latter company are sinking a pit adjoining a portion of the eastern boundary of the estate. The royalty has been actively worked during the last twenty years, and large quantities of ore have been raised from shallow workings, extending over an area of about twenty acres. The present working shaft is in good condition, and is supplied with adequate engine power, and all necessary machinery and plant. It is connected with the Cleator and Egremont Railway by a branch line, and the metal can be tipped into wagons direct from the shaft. The ore of the Bigrigg District is remarkable for its purity and high metallic yield, and commands the highest price. Tenders must be endorsed "Tender for Moor Row Royalty," and will be received by Mr. BROWN, Solicitor, 12, Scotch-street, Whitehaven, up to the 20th August, immediately after which date the tender will be declared. The lessors do not, however, bind themselves to accept the highest or any tender. After the 15th June, conditions of letting may be had, and plans showing the royalty, underground workings, and adjoining mines, may be seen on application to Mr. GEORGE GRAY, M.E., New Lowther-street, Whitehaven; or to Mr. BROWN, 12, Scotch-street, Whitehaven.—7th June, 1877.

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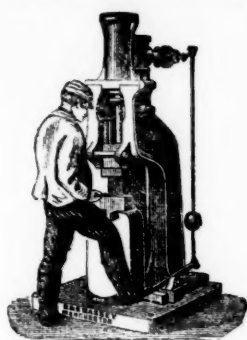
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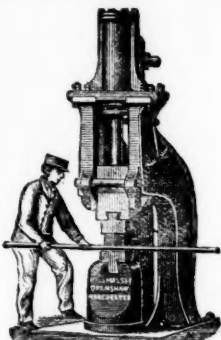
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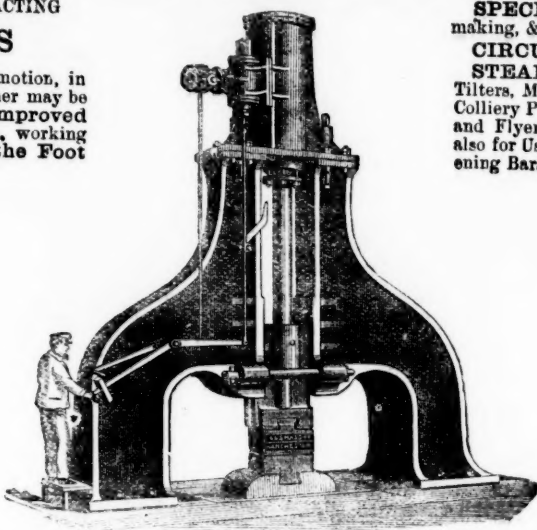
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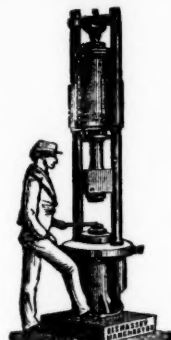
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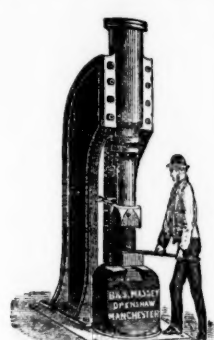
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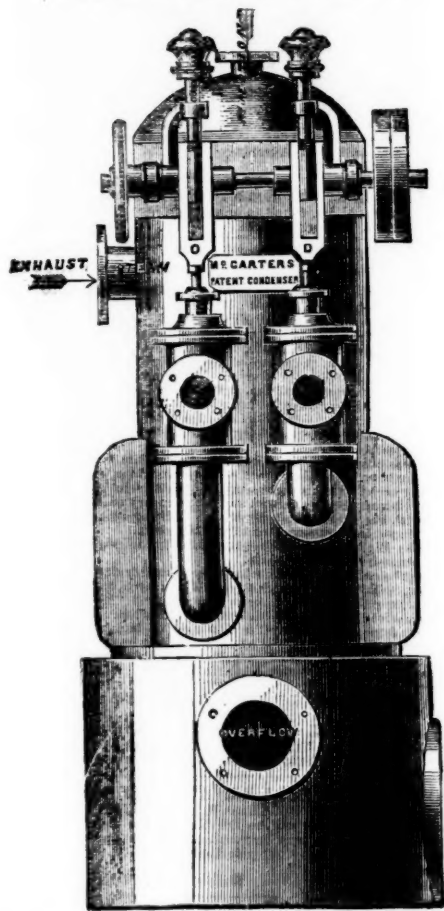
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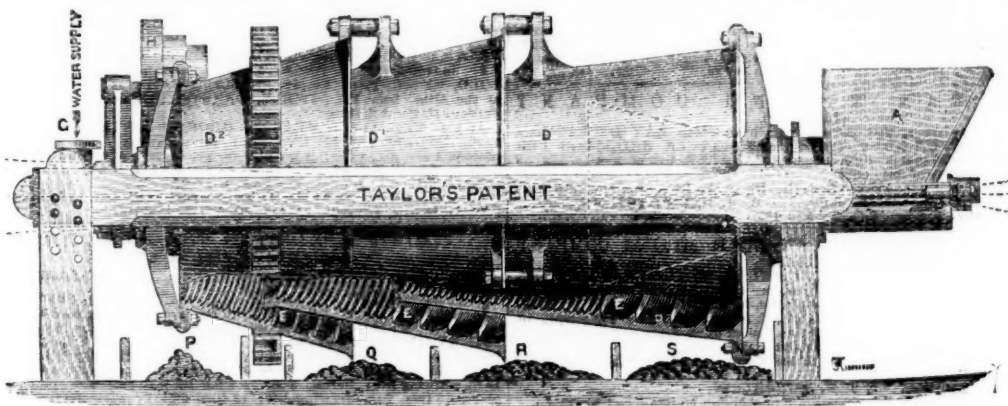
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Mr. TAIT, Manager, East Hetton Quarry Company's Works, Coxhoe, Durham, writing on May 12, 1876, says—"I have pleasure in testifying to the value of your Rock Drills. The two you supplied us with about six months ago are giving us entire satisfaction. The cost of drilling by machine is less than ONE-FOURTH THAT OF DRILLING BY HAND. By the use of the Drills we have been able very greatly to increase the out-put of stone without increasing the number of men employed."

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FOR SEPARATING AND SIZING MINERAL AND OTHER SUBSTANCES.

By the aid of this invention any materials, which are of different specific gravity, can be concentrated and sorted mechanically; while in the case of ores the fine mineral is brought up with the larger particles instead of being washed into the waste—a most important feature.

This machine uses very little water in proportion to the quantity of material treated, and will be found a most useful and efficient dressing apparatus.

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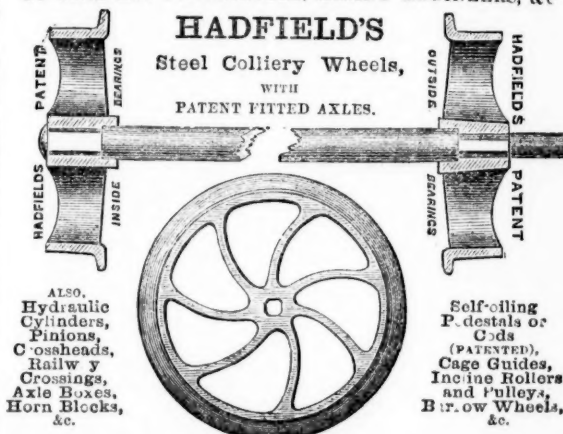


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THE MINING JOURNAL.

NON-DIVIDEND MINES

STOCK-EXCHANGE DIVIDEND MINES.

Shares.	Mines.	Paid.	Last wk.	Clos.	pr.
40000	Aberdunant, <i>s</i> , Llanidloes*	1 0 0...	1 1/2...	1 1/2	1 1/2
10000	Aberystwyth, * <i>s</i> , Llanidloes	5 0 0...	...	...	...
750	Albion, * <i>s</i> , Cornwall	100 0 0...	...	...	...
1800	Alvig & Burg., * <i>s</i> , St. Aust.	3 0 0...	3 1/2...	2 1/2	3 1/2
15000	Amroble Lake, * <i>s</i> , Liskeard	1 10 0...	...	...	...
2000	Assonet, * <i>s</i> , Carnarvonshire	5 0 0...	1 1/2...	1 1/2	1 1/2
50000	Ballycunnisk, * <i>s</i> , Schull	2 0 0...	...	...	...
12000	Bedford United, * <i>s</i> , Tavistock	18 6...	7 1/2...	3 1/2	3 1/2
15000	Belmonte, * <i>s</i> , Devon (27,000 <i>fy.</i> pd.)	1 0 0...	...	...	...
8937	Bine Hills, * <i>s</i> , Cardigan	1 0 0...	...	...	...
10000	Bodidris, * <i>s</i> , St. Agnes	3 7 6...	...	...	...
30000	Bollinger, * <i>s</i> , Denbighshire	1 0 0...	1 1/2...	1 1/2	1 1/2
2000	Bowden Hill, * <i>s</i> , Durham	5 0 0...	6...	6 1/2	6
4000	Bradwell Moss Rake	1 0 0...	...	...	...
10000	Caldbeck Fells, * <i>s</i> , Cumberland*	1 0 0...	1...	7 1/2	1
0000	Cambrian, * <i>s</i> , * <i>s</i> , Cardiganshire	2 0 0...	...	...	...
5000	Cathedral, * <i>s</i> , * <i>s</i> , Green	2 0 0...	2 1/2...	2 1/2	2 1/2
0000	Central Foxdale, * <i>s</i> , of Man (27 <i>sh.</i>)	1 10 0...	1 1/2...	1 1/2	1 1/2
1200	Central Van, * <i>s</i> , * <i>s</i> , Llanidloes	1 5 0...	...	...	...
75	Clementina, * <i>s</i> , Llanrwst	5 0 0...	...	...	...
0000	Combellack, * <i>s</i> , Wendron	2 0 0...	...	...	...
000	Court Grange, * <i>s</i> , North Devon	0 6 0...	3...	2 1/2	3
000	Cwm Dwyfor, * <i>s</i> , * <i>s</i> , Carnarvonsh.	1 0 0...	1 1/2...	1 1/2	1 1/2
000	Cwm Llanerch, * <i>s</i> , Carnarvon	0 15 0...	...	...	...
000	Cwmystwith (New) (3 <i>sh.</i> shares)	5 0 0...	5 1/2...	5 1/2	5 1/2
512	D'Ersey Mountain, * <i>s</i> , * <i>s</i> , Llanrwst.	20 0 0...	...	...	...
000	Denbighshire Consolidated, *	3 0 0...	1 1/2...	1 1/2	1 1/2
000	Derwent, * <i>s</i> , Durham	4 0 0...	3 1/2...	2 1/2	3 1/2
000	Dubby Syke, * <i>s</i> , Durham*	0 12 6...	3 1/2...	3 1/2	3 1/2
000	East Chiverton, * <i>s</i> , Penrhabulosa	4 14 6...	2 1/2...	2 1/2	2 1/2
000	East Craven Moor, * <i>s</i> , Pateley Bridge	10 0 0...	10 1/2...	10 1/2	10 1/2
000	East Goginan, * <i>s</i> , Cardigan	2 0 0...	...	...	...
000	East Van, * <i>s</i> , Llanidloes	8 0 0...	5 1/2...	5 1/2	5 1/2
000	Elgar, * <i>s</i> , * <i>s</i> , Cardiganshire	1 0 0...	1 1/2...	1 1/2	1 1/2
000	Frank Mills, * <i>s</i> , Christow	5 6 0...	3 1/2...	3 1/2	3 1/2
000	Fronvelian, * <i>s</i> , Mont. (4000 <i>sh.</i> <i>fy.</i> pd.)	1 0 0...	...	...	...
000	Gawton, * <i>s</i> , Tavistock	4 3 6...	3 1/2...	3 1/2	3 1/2
000	Glan Clwyd, * <i>s</i> , Gwyddelwern	1 0 0...	...	...	...
000	Glenroy, * <i>s</i> , * <i>s</i> , Isle of Man	4 0 0...	1 1/2...	1 1/2	1 1/2
000	Glyn, * <i>s</i> , Llanidloes	2 0 0...	1 1/2...	1 1/2	1 1/2
000	Goginan, & Level Newydd, Card., <i>s</i>	2 10 0...	...	...	...
000	Gold, * <i>s</i> , Merionethshire	1 0 0...	...	...	...
000	Goreu, * <i>s</i> , Carmarthen	2 10 0...	...	...	...
000	Goredale and Merilyn Cons., * <i>s</i> , Flint	2 10 0...	1 1/2...	1 1/2	1 1/2
000	Gr. E. Foxdale, * <i>s</i> , * <i>s</i> , of Man (11 <i>sh.</i>)	0 18 0...	5 1/2...	5 1/2	5 1/2
000	Great Pant, * <i>s</i> , * <i>s</i> , Holywell	2 0 0...	...	...	...
000	Gr. Wheat Eleonor, * <i>s</i> , North Bovey.	1 0 0...	3...	2 1/2	3
000	Grovevor, * <i>s</i> , Holywell (11 <i>sh.</i>)	0 15 0...	...	...	...
000	Harehope Gill, * <i>s</i> , Durham (41 <i>sh.</i>)	0 5 0...	...	...	...
000	Harwood, * <i>s</i> , Durham	0 15 0...	1...	7 1/2	1
000	Hush Elsteddoff Miners, * <i>s</i>	2 0 0...	...	...	...
000	Islay, * <i>s</i> , Scotland	28 0 0...	...	...	...
000	Killifreeth, * <i>s</i> , Chacewater	2 1 0...	1/2...	1/2	1/2
000	Kingston Cons., * <i>s</i> , Stoke Clissland.	1 0 0...	...	...	...
000	Ladywell, * <i>s</i> , Salop.	2 10 0...	1 1/2...	1 1/2	1 1/2
000	Litto, 10 per cent. pref., <i>ll.</i> each...	0 10 0...	3/8...	3/8	3/8
000	Levant, * <i>s</i> , St. Just	9 6 6...	...	...	...
000	Llanrhaidir, * <i>s</i> , Montgomery	2 0 0...	...	...	...
000	Llanrwst, * <i>s</i> , Carnarvon	0 0 0...	...	...	...
000	Llyn Teify, * <i>s</i> , Llanidloes	1 0 0...	4 1/2...	4 1/2	4 1/2
000	Medlyn Moor, * <i>s</i> , Wendron	1 17 4...	2...	2	2
000	Merioneth Copper, Hayle*	2 0 0...	2 1/2...	2 1/2	2 1/2
000	Mynydd, * <i>s</i> , Cardigan	1 15 0...	1 1/2...	1 1/2	1 1/2

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#100	Abbot, John, and Co. [L.].....	£75 0 0
15	Abbott Steel and Wire Co. [L.].....	14 0 0
100	Altamari Colliery Co. [L.].....	90 0 0
100	Babury Co. [L.].....	10 0 0
10	Bagnall, John, and Sons [L.].....	10 0 0
10	Beggs Coal Co. [L.].....	10 0 0
50	Bilbao Iron Ore Co. [L.].....	10 0 0
10	Bilson & Cranbrough Meadow Coll. Co. [L.].....	10 0 0
50	Blaenavon Iron and Steel Co. [L.].....	10 0 0
100	Boleckow, Vaughan, and Co. [L.].....	45 0 0
60	Bowlving Iron Co. [L.].....	80 0 0
60	Britannia Ironworks Co. [L.].....	28 0 0
100	Brown, Bailey, and Dixon [L.].....	40 0 0
5	Cakemore Iron Works Co. [L.].....	5 0 0
100	Cammell and Co. [L.].....	70 0 0
20	Cannock and Huntingdon Coal [L.].....	10 0 0
20	Cardiff & Swansea Ste. Coal [L.].....	5 0 0
10	Cardigan Steel and Wire Co. [L.].....	10 0 0
10	Central Swedish Iron and Steel [L.].....	10 0 0
60	Chapel Iron Works Colliery.....	5 0 0
60	Charlton Iron Co. [L.].....	50 0 0
10	Chatterley Iron Co. [L.].....	45 0 0
10	Chillingham Iron Co. [L.].....	10 0 0
1	Clee Hill Colliery Co. [L.].....	1 0 0
1	Conssett Iron Co. [L.].....	7 10 0
1	Conssett Spanish Ore [L.].....	1 0 0
20	Darlington Iron Co. [L.].....	40 0 0
60	Davy Brothers [L.].....	10 0 0
5	Diamond Ore Co. [L.].....	5 0 0
82	Ebbw Vale Co. [L.].....	39 0 0
100	Fox, Samuel, and Co. [L.].....	80 0 0
10	General Mining Ass. [L.] (returned).....	9 0 0
2	Great Western Coal Co. [L.].....	17 0 0
2	Gwynnwillim Colliery Co. [L.].....	2 0 0
15	Hopkins, Gilkes, and Co. [L.].....	11 0 0
10	Knowles, Andrew, and Sons [L.].....	10 0 0
10	Llay Hall Colliery Co. [L.].....	10 0 0
5	Littleddan Woodside Colliery Co. [L.].....	5 0 0
50	Llynvi, Ogmore, & Tondrefydd Iron Ore Co. [L.].....	50 0 0
10	Lydney and Wigpool Iron Ore [L.].....	8 5 0
5	Maelor Iron Ore Co. [L.].....	5 0 0
5	Mold and Llangefnog Colliery Co. [L.].....	5 0 0
5	Mynyddi Iron Ore and Coal Co. [L.].....	10 0 0
10	Nant-y-Glo and Bialina (S p.c. pref.).....	10 0 0
10	New Buddha Coal and Iron.....	20 0 0
10	Newport Abercrom Coal Co. [L.].....	10 0 0
10	Northampton Coal, Iron & Wagon [L.].....	10 0 0
10	Northfield Iron Co. [L.].....	1 0 0
10	Norton Green Iron Co. [L.].....	1 0 0
10	Palmer's Shipbuilding and Iron [L.].....	25 0 0
10	Parkgate Iron Co. [L.].....	25 0 0
10	Patent Nut and Bolt Co. [L.].....	14 0 0
10	Patent Shaft and Axletree [L.].....	10 0 0
10	Pelsall Coal and Iron [L.].....	15 0 0
10	Phoenix Bessemer Co. [L.].....	50 0 0
10	Rennet Iron Co. [L.].....	10 0 0
10	Richards and Co. [L.].....	10 0 0
10	Sandwell Park Colliery Co. [L.].....	100 0 0
10	Shotts Iron Co. [L.].....	10 0 0
10	Sheffield Bridge Iron and Coal [L.].....	58 0 0
10	Silkestone & Dodworth Cl. & Iron [L.].....	37 0 0
10	Skerne Ironworks [L.].....	50 0 0
10	South Crofton Iron Co. [L.].....	21 0 0
10	South Wales Coal Co. [L.].....	60 0 0
10	Staveley Iron and Coal [L.].....	10 0 0
10	Swansea Valley Steam Coll. Co. [L.].....	20 0 0
10	Tameside Iron Company.....	10 0 0
10	Tedregh Iron and Coal Co. [L.].....	25 0 0
10	Tipton B. shares.....	12 0 0
10	Union Mining Co. [L.].....	1 0 0
10	United Bituminous Collieries [L.].....	10 0 0
10	Unconquer Coal [L.].....	10 0 0
10	Vale of Glamorgan, Sons, & Co. [L.].....	10 0 0
10	Welsh Ironworks Co. [L.].....	80 0 0
10	Whitburn Iron and Steel [L.].....	20 0 0
10	West Mostyn Coal [L.] (12 p.c. pref.).....	5 0 0
10	West Swansea Colliery Co. [L.].....	10 0 0
10	Whitehaven Iron Co. [L.].....	10 0 0
10	Wigan and Whiston Coal Co. [L.].....	75 0 0
10	Widnes Coal and Iron Co. [L.].....	75 0 0

NON-DIVIDEND FOREIGN MINES

Non-Dividend Foreign Mines.		April 1878.			
		Paid.	Last Fr.	Clos. Fr.	Last Cas.
20000	Anglo-Australian, g, Victoria*	2 10 0	—	—	—
5000	Anglia Phosphate, West Indies (4000 issued)	10 0 0	—	—	...Fully pd.
12000	Argentine, g, Argentine Republic	5 0 0	—	—	...Fully pd.
10000	Australian Central, g, (also 6000 deferred shares)	5 0 0	4 1/2	4 1/2	...Fully pd.
3000	Bellavista, s, Peru (210 shares)	10 0 0	—	—	...Fully pd.
35000	Blue Tent, hys, California	5 0 0	—	—	...Fully pd.
35000	Cesena Sulphur Company, Romange, Italy*	10 0 0	3	3 3/4	...Fully pd.
60152	Chocoma, g, s, Nicaragua*	2 0 0	—	—	...Fully pd.
85000	Excelsior Chilil, s, i	2 0 0	—	—	...Fully pd.
10 000	Eschequer, g, California*	5 0 0	3 1/2	3 1/2	...Fully pd.
4000	Holcombe Valley, g, California*	5 0 0	—	2 1/2 3/4	...Fully pd.
3000	Hornachos, * s, i, Spain	1 0 0	3 1/2	3 1/2	Dec. 1871
12 000	Hultafall, * s, i, Orebro, Sweden	10 0 0	—	—	...Fully pd.
5000	Imperial Brazilian Collieries, Brazil*	5 0 0	15	—	July 1878
0 000	J. A. L., g, s, California*	5 0 0	6	5 1/2 0	...Fully pd.
3500	J. A. L., g, s, Nicaragua*	1 0 0	—	—	...Fully pd.
1 000	Lanestosa, * s, Newfoundland	2 0 0	3 1/2	3 1/2	...Fully pd.
7 000	Malabar, g, Colombia (2 shares)	10 0 0	3 1/2	3 1/2	...Fully pd.
4 000	Malpasco, g, Colombia (7500 shares)	1 15 0	—	—	...Fully pd.
4000	Menzenberg, g, Honnet, Germany*	1 0 0	3 1/2	3 1/2	Mar. 1876
4558	New Benseng, s, i, Germany	1 0 0	3 1/2	3 1/2	...Fully pd.
3000	New Quebrada, g, Venezuela	5 0 0	—	3 1/2 3/4	...Fully pd.
3000	Oregon, * g, Oregon, U.S. (preference shares)	5 0 0	—	—	Nov. 1876
3000	Panulicillo, g, Chile (45000 debentures)	5 0 0	2	1 1/2 2 1/2	...Fully pd.
3000	Pestarena United, g, g, Chile	4 0 0	3 1/2	3 1/2	...Fully pd.
3000	Providencia and New Honario, * s, Mexico*	4 0 0	1 1/2	1 1/2	Sept. 1876
451,000	Rica, g, Colombia (40000 issued)	3 0 0	3 1/2	3 1/2	...Fully pd.
451,000	Rio Tinto, * g, Huelva, Spain	1 0 0	—	3 1/2 3/4	...Fully pd.
3000	Rosa Grande, g, Brazil* (21 shares)	1 0 0	—	3 1/2 3/4	...Fully pd.
3000	Russia Copper, Orenburg and Ufa*	Stock	58	56 1/2	...Fully pd.
3000	San Pedro, g, Chile	10 0 0	2 1/2	2 1/2	July 1878
3000	Silver Plume, s, Colorado*	2 0 0	—	1 1/2 2 1/2	...Fully pd.
3000	Tecoma, s, Utah*	1 0 0	3 1/2	3 1/2	...Fully pd.
3000	Thornhill Reef, g, Australia	10 0 0	1 1/2	1 1/2	...Fully pd.
174	United Mexican, s, Mexico*	10 0 0	1 1/2	1 1/2	...Fully pd.
3000	Utah, g, s, Utah*	25 0 0	—	3 1/2 3/4	...Fully pd.
3000	Yorke Peninsula, g, South Australia	15 1 3	2 1/2	2 1/2	...Fully pd.
3000	Yorke Peninsula, g, South Australia Preference	1 0 0	—	—	May 1876
	Have made calls since last dividend was paid.	1 0 0	1 1/2	1 1/2	...Fully pd.

Argentine, 1898, 6 per cent. Closing Prices.

MISCELLANEOUS STOCKS, BONDS, LOANS, AND TRUSTS		
	Closing Prices.	Closing Prices.
Argentina, 1895, 5 per cent.	53 65	Foreign and Col. Gov. Trusts, 5 p. cent.
Bolivia, 5 per cent.	24 22	Do., 5 per cent., 2d issue
Brazilian, 1885, 5 per cent.	94 94	Do., 5 per cent., 3d issue
Chilian, 1896, 5 per cent.	94 94	Do., 1872, 4th issue
City of Providence, 5 p. c. coupon bonds	102 102	Do., 1873, 5th issue
Egyptian, 1882, 7 per cent.	100 101	Peru, 1872, 5 p. cent.
Do., unified debt, scrip.	61 53	Do., 1872, 5 p. cent.
Do., 1 per cent., V.M.L.	61 63	Russian, 5 p. cent. 1st Mort.
Do., 5 per cent., V.M.L.	67 72	Spanish, Quicksilver Mort.
Do., 7 per cent., V.M.L.	71 74	
Do., 7 per cent., V.M.L.	63 64	

^a Limited Liability Companies; † quoted on
I have paid dividends.

25 Austral. Mgmt. Fund	100	0	0	37
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25	Australian Land and Finance [L.]	8 0 0 .. 3
10	Avenside Engineering [L.]	21 10 0 .. 3
Stk.	Baltimore and Ohio [L.]	7 0 0 .. 4
10	Brighton Aquarium [L.]	100 0 0 .. 103
Stk.	Cent. of New Jersey Coal [L.]	10 0 0 .. 12
Stk.	Cent. Pacific of Calif., 1st Mort.	100 0 0 .. 85
25	City of London Real Property [L.]	12 0 0 .. 0
25	Col. Miners of Eug. (7 p. c. p. ef.)	25 0 0 .. 0
5	Diamond and Boring	4 10 0 .. 3
15	Fore Street Warehouse Credit	8 0 0 .. 0
15	Foster, Porter, and Co. [L.]	14 10 0 .. 13
5	Gen. Phos. & Chem. Works [L.]	10 10 0 .. 10
1	Glaishale Whinstone Quarry	1 0 0 .. 0
1	Greenhill [L.]	1 0 0 .. 0
17	Huddersfield Hay Company	17 0 0 .. 114
Stk.	Illinois Central Copper and Sul. Co.	9 0 0 .. 83
Stk.	Illinois & St. Louis Bridges	100 0 0 .. 80
Stk.	Iditto, 2nd Mort., 7 per cent.	100 0 0 .. 93
Stk.	1 Illinois Cent. Sinking Fund, 6 per cent.	100 0 0 .. 55
Stk.	Iditto, 6 per cent.	100 0 0 .. 90
7½	Imperial Credit [L.]	7 10 0 .. 13
Stk.	Lehigh & Con. Mort., A, 6 p. cent.	100 0 0 .. 89
10	Miner's Safe [L.]	10 0 0 .. 9
25	National Discount	10 0 0 .. 9
Stk.	N. Cent. Rail. Co. M.J., 6 per cent.	10 0 0 .. 84
5	Patent Gunpowder Company	5 0 0 .. 84
10	Pawson and Co. [L.]	5 0 0 .. 84
50	Peninsular and Oriental Steam	50 0 0 .. 87
Stk.	Pennsylv. Gen. Mort., 6 p. cent., 1910	100 0 0 .. 104
Stk.	Piedmont Sinking Fund, 6 p. ct., 1905	100 0 0 .. 92
Stk.	Scottish Investment Company	100 0 0 .. 180
Stk.	Iditto, 6 per cent. Preference	100 0 0 .. 121
10	Silver Light (Ord. sh.)	10 0 0 .. 0
20	Suez Canal Shares	20 0 0 .. 0
12	Telegraph Construc. & Maint. [L.]	12 0 0 .. 0
5	Iditto, Second Bonus Three per Cent.	5 0 0 .. 3½
Stk.	Tharsus Sulphur and Copper Co.	10 0 0 .. 21
Stk.	Union Pacific Land Grant, 1st Mort.	100 0 0 .. 93
Stk.	Union Pacific Railway, 1st Mort.	100 0 0 .. 101

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